SEP 11 1944

Medical Library

BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SATURDAY AUGUST 19 1944

TABLE OF CONTENTS

Scurvy: A Survey of 53 Cases R. B. McMillan, M.D., and J. C. Inglis, M.B. 233

Desensitization in Allergic Recipients after Serum Transfusions Kate Maunsell, M.D. 236

Bleeding Gums in R.A.F. Personnel: Value of Ascorbic Acid W. P. Stamm, M.B., T. F. Macrae, D.Sc., and Simon Yudkin, M.B. 239

Incidence of Gingivitis in the R.A.F. G. A. Smart, M.D. 242

Rupture of Aortic Aneurysm into the Duodenum J. Edgar Morison, M.D. 244

MEDICAL MEMORANDA

Rupture of Rectus Abdominis as a Complication of Pregnancy. S. W. Liggett, F.R.C.S.Ed. 245

GENERAL ARTICLES AND NEWS

Goniometer for Measurement of Supination and Pronation. James Patrick, F.R.C.S. 246

Medical Experiences in Burma Warfare 251

London County Council 251

Butt Memorial Fellowships: Prof. Elliott's Retirement 252

Control of Narcotic Drugs 252

Preston Hall 252

The Services 260

Universities and Colleges 260

Medical Notes in Parliament 257

Medical News 258

REVIEWS

Nutritional Deficiencies 245

Spanish Medical Monographs 245

Aspects of Industrial Medicine 245

Pharmacology in Brief 246

Notes on Books 246

OBITUARY

Alexander Primrose, C.B., F.R.C.S. 257

Alexander Kidd, M.B., C.M. 257

Epidemiology Section 259

LEADING ARTICLES

Scotland's Health 247

Sulphonamide Sensitivity 248

ANNOTATIONS

More Questions and Answers 248

Renal Osteodystrophy 249

Dehydrated Vegetables 250

Penicillin for Civilians 250

LETTERS AND ANSWERS

Injections for Arthritis—Chloride Content of Blood in Drowning—"Safe" Period—Function of Spleen—Isolation of Scarlet Fever—Muscular Twitching before Sleep—Non-tropical Elephantiasis—After-treatment of Acute Nephritis—Toxaemia persisting after Parturition — D.D.T. — Income Tax — Oedema of Ankles in Hot Climate—Gonorrhoea in N. Africa—Marriage and Parenthood—Concurrent Herpes Zoster and Varicella—Hospitality for Doctors' Children 260-2

SUPPLEMENT

Medical Services in Yugoslavia 39

British Medical Students' Association: Replies to Questionary 40

Correspondence 41

Association Intelligence 44

H.M. Forces Appointments 44

CORRESPONDENCE

Freedom to Publish. Tom Garland, M.D. 252

Kenny Treatment of Poliomyelitis. Norman Capener, F.R.C.S. 253

Registration of Specialists. A. Piney, M.D. 253

The Surgeon and the Anaesthetic. Philip Ayre, M.R.C.S.; Una M. Westell, M.R.C.S. 254

Progesterone. D. G. W. Clyne, F.R.C.S. 254

Action of Penicillin. G. Arbour Stephens, M.D. 255

Infant Feeding. Sylvia Dickinson, M.R.C.S. 255

Post-operational Strain in the Navy. A. Guirdham, D.M.; J. Mackwood, M.R.C.S. 255

Service Medicine 255

U.V. Light Treatment at Welfare Centres. S. T. Beggs, M.D., D.P.H. 256

Yeast in Furunculosis. S. Watson Smith, M.D. 256

The Fly Menace. P. Jacobs, M.B. 256

Mr. Prynne's Habits. W. R. Cunningham 256

Representation on R.C.S. Council. P. B. Spurgin, M.R.C.S. 256

BRITISH MEDICAL ASSOCIATION, TAVISTOCK SQUARE, LONDON, W.C.

No. 4363, WEEKLY, PRICE 1/6

Copyright

REGISTERED AS A NEWSPAPER

Sleep, too, is rationed..

There is often a shortage of sleep-hours for those working under the stress of war conditions.. Up at all hours.. Extra late shifts..
Here is a way to make the limited sleep ration go further. Drink a cup of Bourn-vita before putting out the light. It contains malt, milk, eggs and chocolate and its Vitamin B, phosphorus and calcium are valuable for the nerves. Bourn-vita brings healthy, *natural* sleep. It is light and easily digestible—as good for you as it is for your convalescent patients.

CADBURYS

BOURN-VITA

FOR DEEP, RESTORING SLEEP

ENO'S "FRUIT SALT" for use with sulphonamides

SINCE it is still regarded as the safer practice during sulphonamide medication to prohibit strong purges and sulphur-containing foods, etc., ENO's "Fruit Salt" remains the aperient of choice. It contains no sulphates and leads to no risk of systemic dehydration. ENO's is partially absorbed into the system and increases the alkalinity of the body fluids. In this way it tends to promote the therapeutic efficacy of the sulphonamide treatment.

ENO'S "Fruit Salt" is prepared by a special process and contains approximately: Sod. Bicarb. 53.25%, Acid. Tart. 43.50%, Sod. Bitart. 1.50%, Sod. Tart. 1.75%.

J. C. ENO, Ltd., Medical Dept., Great West Road, Brentford, Mx.

1847 — 1944

CHLOROFORM
PURE — DUNCAN
EX
ETHYLIC ALCOHOL

DUNCAN, FLOCKHART & CO.
EDINBURGH AND LONDON

'SOLVOCHIN'

25% AQUEOUS SOLUTION OF QUININE

for

painless intramuscular (intragluteal) injection

Isotonic (pH—7.2)

SOLVOCHIN has been introduced for the treatment of malaria. Its parenteral administration is simple and free from complications. The preparation is painless and does not call for prolonged massage of the site of injection. It is economical, and when combined with mepacrine two daily injections for four days are generally sufficient.

Further particulars will be supplied on request.

Manufactured by:—

THE CAMDEN CHEMICAL Co. Ltd.
Northington House, Northington Street, London, W.C.1

Available in 2.2 c.c. and 1.1 c.c. ampoules.

BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 19 1944

SCURVY: A SURVEY OF FIFTY-THREE CASES

BY

R. B. McMILLAN, M.D., B.Sc., M.R.C.P.Ed.

Medical Superintendent, Eastern General Hospital, Edinburgh

AND

J. C. INGLIS, M.B., Ch.B.

Late Senior Medical Officer, Eastern General Hospital, Edinburgh

Between Aug., 1937, and Feb., 1944, inclusive, 53 patients with scurvy—48 males and 5 females—were admitted to medical wards in an Edinburgh municipal general hospital. The annual number of cases, and the percentage they formed of all medical admissions, are shown in Table I.

TABLE I

Year (Aug.–July)	Cases of Scurvy			Nos. all Medical Admissions			% Incidence Scurvy		
	M.	F.	Total	M.	F.	Total	M.	F.	Total
1937-38 ..	3	—	3	1,055	767	1,822	0·28	—	0·16
1938-39 ..	6	1	7	833	583	1,416	0·71	0·17	0·49
1939-40 ..	5	—	5	649	489	1,138	0·77	—	0·44
1940-41 ..	8	1	9	378	246	624	2·11	0·41	1·44
1941-42 ..	18	2	20	368	283	651	4·89	0·71	3·07
1942-43 ..	8	1	9	459	360	819	1·74	0·28	1·09
1943-44 ..	—	—	—	682	599	1,281	—	—	—

The patients ranged in age from 41 to 82 years. Including the 5 women, 43 were aged 65 or over. Eight of those under 65 were admitted in 1941–2. Fifty-one lived alone (single 27, widowed 17, separated 7); two were married and lived at home. Lodging conditions were: working-men's hostels, 28; private houses, 13; furnished rooms, 8; living with relations, 3; lodgings with board, 1. Forty-eight cooked for themselves, this total including one of the married men who kept house for his wife, who worked and had her main meal out daily. Fifty gave satisfactory details about income. Thirty-four were dependent on an old age pension plus a supplementary allowance which increased with the rising cost of living, giving totals varying from 13s. to 22s. 6d. a week. Thirteen were dependent on private pensions varying from 5s. house-free to 39s. 5d. a week, 10 of them having 25s. a week or more. Three were in gainful employment with 60s. to 80s. a week. From details given regarding expenditure on lodgings (30 to 40% of incomes under 25s. a week), clothing, tobacco, and alcohol (heavy in three instances only), the income remaining for food per week was calculated. Twelve had 8s. a week or less; 13, of whom 7 were admitted before Aug., 1940, had from 8s. to 10s. a week; 25, admitted with one exception after Aug., 1940, had 10s. a week or more. Eighteen had not sufficient to buy a diet adequate in proteins, fats, calories, and vitamins, assuming 8s. a week to be necessary for this until July, 1940, and 10s. a week thereafter (Orr, 1937). Dietary histories showed that the intake of potatoes and vegetables was low in all cases and very low in some. Approximately two-thirds ate fruit—most of them irregularly—when it was obtainable. Patients from this group were naturally admitted in great numbers after 1940 and provided the bulk of the cases seen. They had mainly adequate food incomes. One patient ate regularly in a British Restaurant; six others did so very occasionally. A few in 1941–2 complained of the high cost of vegetables. Two men who were working said that the shops were closed when they were free to shop. Many complained of lack of cooking facilities in their lodgings. One individual —the remaining married man—had been carefully adhering to a vitamin-deficient diet which had been prescribed for him for a gastric condition. Physical or mental defects were present in six instances, but in four these coexisted with food incomes of 8s. a week or less.

Clinical Notes

The disease developed most commonly in June, then came May, March, and April in that order. No case began in July, and few in the remaining months of the calendar year. 1941–2 showed an unusual feature with admissions in Nov. and Dec., 1941, and Jan. and Feb., 1942. The time elapsing between the first sign or symptom and admission to hospital was less than one month in 80% of cases. Few arrived within one week and only one after 18 months. The disease, by the usual standards, was mild in 2 instances and moderate in 51. All patients had skin petechiae. In two these were the only sign. Fifteen had deeper haemorrhages in one leg, 23 in both legs, and 13 in both arms and legs. Where teeth existed spongy and infected gums were very common. Bleeding gums were noted on 8 occasions, being present only in association with gross changes elsewhere. The onset and progress of the disease were typical; it appeared first in one leg, then the other, and finally the arms. Discomfort was usually mild at first, but became progressively more severe; within a month most patients were crippled, and were pleased to be allowed to rest in bed. One patient had epistaxis, another intestinal colic with melaena, and three of the most severe had histories of intestinal colic alone. Frank lower-bowel haemorrhage or haematuria was never encountered. "Lumbago" was experienced by three individuals just before the leg symptoms were noted. One female developed a large haematoma of the forearm after a Hess cuff test had been done. Poor wound-healing was noted and reported elsewhere (McMillan, 1943). None of the patients had clinically evident cataracts. Fractional test meals were carried out on 10 patients. The results and the blood findings are given below. In 50 patients the haemorrhages appeared spontaneously. In 3, trauma, by causing grossly excessive bruising, drew attention to the deficiency. One individual, who developed the disease after being confined to bed for six weeks, had haemorrhages on the buttocks only, the legs being unaffected.

Multiple neuritis (3 males) and pellagra (2 males and 1 female) were also recognized clinically. Hyperkeratosis perifollicularis was very common but not universal.

Chemical and Other Tests

1. *Cuff Test.*—Positive-pressure cuff tests—Hess (Hess, 1920) or Göthlin (Falk *et al.*, 1932)—were done on 40 patients before and after saturation with ascorbic acid. Of 22 tested by Hess's method 14 were positive before and negative after saturation, 4 positive before and after, and 4 negative before and after. Of 18 by Göthlin's method, 7 were positive before and negative after, 2 positive before and after, and 9 negative before and after. Neither test was diagnostic, but the Hess method gave a higher percentage of the usually expected result. The results by either method were unrelated to the plasma ascorbic acid level or the saturation requirements.

2. *Vitamin C Content of Urine* (using the dichlorophenol-indophenol indicator).—The urine passed by the patients during their first 24 hours in hospital was collected, stored with due precautions, and examined. The vitamin C content varied from 1.5 to 16 mg., averaging 7 mg. Thirty of them were then tested for deficiency by one of three methods ((*a*) Abbasy *et al.*, 1935; (*b*) Eddy and Dalldorf, 1941; (*c*) Harris and Abbasy, 1937). All were deficient. Further ascorbic acid was then given, in the manner recommended, until saturation was achieved. The results are shown in Table II. There was no steady relationship between the saturation requirements and the clinical extent of the disease.

TABLE II

Method	Amount (g.) Ascorbic Acid required for Saturation								Average (g.)
	2–2·4	2·5–2·9	3–3·4	3·5–3·9	4–4·4	4·5–4·9	5–5·4	5·5–5·9	
(*a*) ..	1	2	4	4	1	—	—	—	3·18
(*b*) ..	—	—	1	1	2	1	1	3	4·5
(*c*) ..	—	1	—	2	—	5	1	—	4·1
Total	1	3	5	7	3	6	2	3	3·85

3. *Plasma Ascorbic Acid Content.*—This estimation was made on 22 patients within 48 hours of admission. All had levels compatible with clinical scurvy—e.g., eight had 0 to 0.04 mg. %; two, 0.05–0.09 mg. %; five, 0.10–0.14 mg. %; four, 0.15–0.19 mg. %; two, 0.20–0.24 mg. %; and one, 0.25–0.29 mg. %. An inconstant relation existed between these figures and the clinical picture, but not to the saturation requirements.

4. *Blood Tests.*—Bleeding time (Dukes's method), 1½ to 3 minutes. Coagulation time (capillary tube with normal control), 3 to 9 minutes, but never longer than the control. Platelet count (dry smear), 120,000 to 340,000 per c.mm.

Blood Picture

A complete blood examination was conducted on 38 males and 2 females within 48 hours of admission. Red cell counts ranged from 1,730,000 to 5,220,000 per c.mm., with 65% of all counts above the 3,000,000 level. Two males had no oligocythaemia. Haemoglobin ranged from 38 to 85% (Sahli), and from 5.3 to 11.9 g. per 100 c.cm. The mean corpuscular haemoglobin (M.C.H.) varied from 16 to 38γγ. White blood cell counts ranged from 2,800 to 12,000 per c.mm. Erythrocytes were mainly normal in size and shape, anisocytosis being noted in approximately 20% of smears and being much more common than poikilocytosis. Ring staining was observed on three occasions. Nucleated red cells were never seen. Reticulocytes ranged from 0.5 to 1.5% with one exception, in which they were 4%, the patient actively losing blood from haemorrhoids. The morphology of the leucocytes was not specially noted. The sternal marrows of 6 patients were examined: five were normoblastic, one megaloblastic. Two of the former showed a few megaloblasts. The presence of megaloblasts was associated with achylia gastrica in two instances and a low free HCl in another. One patient with a markedly macrocytic anaemia and a normoblastic marrow had normal test-meal findings (Case 3, Table IV). Short details relating marrow and blood pictures are given in Table IV.

A morphological classification of the various anaemias was made, using the red cell count and the M.C.H. of each case. The placing allocated to the 6 fully investigated cases was then checked, and it was found that only one had been placed wrongly—as "slight simple microcytic" instead of "moderate normocytic." With this error corrected the table is reproduced below (Table III), and it is submitted that any error in it lies in the existence of an inflated "simple microcytic" group at the expense of the "normocytic" group.

TABLE III.—*Morphological Classification of the Anaemias in 40 Scorbutic Patients (after Wintrobe, 1942)*

Type	Degree	No.	Type	Degree	No.
Macrocytic	Slight ..	0	Simple microcytic	Slight ..	4
	Moderate ..	2		Moderate ..	10
	Severe ..	0		Severe ..	0
Normocytic	Slight ..	10	Hypochromic microcytic	Slight ..	4
	Moderate ..	8		Moderate ..	2
	Severe ..	0		Severe ..	0

The anaemia present bore no constant relation to the extent of haemorrhages or to the plasma ascorbic acid content or saturation requirements of the patients. It was varied in type, being mainly normocytic, rarely hypochromic microcytic, and more rarely macrocytic.

Treatment

This was dictated at times by experimental needs. The administration of ascorbic acid in addition to the ordinary hospital diet always resulted in quick improvement. Appetite improved, pain and stiffness in the legs disappeared, and within a week the patient felt very well. This change was commented upon by some of the sufferers, who said they "had not been so well for years."

Particular attention was paid to changes in the blood picture during treatment. Six clinical experiments were designed to elucidate certain points. To save space the observations made have been condensed as much as possible. The blood picture and the results of treatment of the 10 patients who form the basis of experiments 3 to 6, inclusive, however, were considered interesting enough to be given (see Table IV). Reference to this table is made in the text which follows. It will be noted that the columns for red cell count, Hb, etc., have been subdivided into five. Findings, at any one time in any case, are given in the correspondingly numbered sub-columns—e.g., the blood picture in Case 1 on admission can be obtained by reading all the figures in sub-columns 1, and so on. The experiments were consecutive, and the final blood figures in experiment 3, shown in sub-column 2, are the initial figures for experiment 4, the final figures for which are shown in sub-column 3, and so on. Lastly, in order that the duration of each clinical test could be shown, bracketed figures, giving the time in days, have been placed above the red cell counts.

Exp. 1.—Four patients with anaemia ranging from 2,490,000 R.B.C. per c.mm. and 42% Hb to 3,350,000 R.B.C. per c.mm. and 62% Hb were placed on the ordinary hospital diet containing a calculated vitamin C and iron content of 15 mg. and 14 mg. daily respectively. Red cell and Hb regeneration began immediately, a reticulocytosis of 4% being noted in two of the cases.

Exp. 2.—Eleven patients with anaemia ranging from 2,200,000 R.B.C. per c.mm. and 40% Hb to 4,670,000 R.B.C. per c.mm. and 85% Hb were given the same diet (approximately) plus 500 mg. of ascorbic acid daily by mouth until saturated, and thereafter a maintenance dose of 100 mg. daily. Red cell and Hb regeneration again began immediately, and continued until the anaemia was cured. Reticulocytes never rose above 2% in any instance. Overall, the response was as good as in the case of the four who were not given ascorbic acid. In general, the more severe the anaemia the more rapid the rate of red cell and Hb regeneration. Falling M.C.H. values in a number of cases suggested that extra iron would have been advantageous.

Exp. 3.—Ten patients, details of whose blood pictures are given in sub-columns 1 of Table IV, were placed on a vitamin-C-free diet. This consisted of well-cooked meat, tripe, rabbit, chicken or fish, fried bacon, powdered egg, porridge, boiled rice, semolina or custard, bread, margarine, cheese, cocoa or tea. No soups or vegetables, or foods cooked with vegetables, were permitted, and the 4/5 pint daily milk ration was heated to 100° C. for 20 minutes and cooled before issue. Extra vitamins were added by giving 1 drachm Halibol and 6 pulvules of Betalin Co daily by mouth.* Clinical experience of this diet indicated that it contained little or no vitamin C. Its calculated iron content was 6 mg. daily.

The blood pictures of these patients after periods ranging from 9 to 14 days on this diet are given in column 2 of Table IV. Briefly, 5 patients showed increase in red blood cells and Hb, the rate of improvement varying considerably. The remaining 5 showed no change in their red cell count, the Hb also remaining stationary in all but one, in whom it rose 10%. Reticulocytes rose to 4% in one of the patients showing improvement; the others never rose above 1.5%.

Exp. 4.—Six of these patients (Nos. 1, 2, 3, 4, 6, and 7 in Table IV) were kept on the vitamin-C-free diet for further periods, with the addition of 18 gr. of ferrous sulphate daily by mouth, ac. hydrochlor. dil. m. 60 t.i.d. with meals being given also to those with achlorhydria. The blood pictures at the end of this test are shown in sub-columns 3 of Table IV. The red cell count rose in five but remained stationary in one. The Hb rose in all. The patient whose

* Represent vitamin A 60,000 I.U., vitamin D 10,000 I.U., thiamin 6 mg., riboflavin, 1,998 gammas, nicotinic acid 12 mg., pyridoxine 1,200 gammas, plus other factors of vitamin B complex from liver-stomach concentrate and a negligible amount of anti-anaemic factor.

red cell count remained stationary had shown improvement on the previous diet. Two now improving were doing so for the first time, but, as one had a peak reticulocytosis of 3.5% three days after iron was added, the improvement was judged to be a delayed response to the earlier treatment. In the other it may have been likewise. Reticulocytes, except as above, remained below 2%.

Exp. 5.—The same 6 patients were used in this test, their treatment being altered only by the administration of 500 mg. of ascorbic acid daily by mouth until saturated and thereafter a maintenance dose of 100 mg. daily for the remainder of their varying test periods. Their final blood pictures are given in sub-columns 4 of Table IV. The red cell count rose in five and the Hb in four. As the cell count and Hb in those not improving (Cases 1 and 2) were already high when the test began it was thought that they had already reached their maxima. The individual whose blood picture had improved and then remained stationary in the two previous tests now showed a marked improvement, and had a 4% reticulocytosis on the sixth day. Reticulocytes otherwise remained under 2%. Absolute blood findings were by now normal or nearly so. The original megaloblastic marrow was now normoblastic.

Exp. 6.—Four patients (Nos. 5, 8, 9, and 10, Table IV), originally on the vitamin-C-free diet and referred to in experiment 3, were given, at the end of that experiment, ascorbic acid by mouth in saturating doses as detailed before, and thereafter the usual 100 mg. daily maintenance. Their blood pictures at the conclusion of this test are shown in sub-columns 5, Table IV. The red cell count rose in three and remained stationary in one. The Hb rose in all—slightly in one showing a good red cell rise. Improvement began only after two or three days, and was slow initially, accelerating later. Reticulocytes never rose above 2%. The patient whose red blood cells failed to rise (No. 10) later resisted liver injections, thyroid, etc., and the opinion was formed that his marrow was hypoplastic.

As no patient on the C-free diet showed a drop in either red cell count or Hb, regeneration, however slow, must have been going on. Lack of vitamin C alone in the diet did not prevent blood formation. In most individuals its presence accelerated regeneration. For this action little seemed to be required, as it was supplied by an ordinary mixed hospital diet. Iron lack was not a serious factor in the majority of cases investigated.

The anaemias investigated were nutritional in origin. The main causal factor was contained in the vitamin-C-free diet. Lack of vitamin C alone was not the cause of the anaemias, although it might have helped in their development. Iron lack played a minor part.

Discussion

The disease observed was typical "bachelor" scurvy. There were three root causes. First and most important was ignorance, mainly in males, of the need for potatoes and vegetables in the diet. Second was apathy leading to neglect of the same items because they required preparation and cooking. Third was poverty, making it impossible to buy an adequate diet or live anywhere but in the worst type of lodging with poor cooking facilities. The first was not so significant in peacetime, as many countered it by eating fruit. Wartime scarcity of fruit without a compensatory increase in the intake of potatoes and vegetables resulted in such individuals developing scurvy. This group, often younger and better off than the usual scorbutic, was responsible for most of the increase in the disease in 1940–1–2. What probably happened was hat those dependent on fruit developed scurvy quickly and were admitted in 1940–1. Those less dependent developed it more slowly and were not admitted until 1941–2, appearing out of the usual season in many instances. This group was the greater, and 1941–2 had many more admissions than 1940–1. In 1942–3 two patients only of this type were seen, and as a result the total for the year was low. The inference was that a lesson was being learnt and that such individuals were eating more potatoes and vegetables, so that vitamin C intake, which deteriorated in the two years after 1940, when shortages and rationing first became apparent, was improving. As this seemed important an attempt was made to define the position in Edinburgh and Glasgow by obtaining from the Municipal General Hospitals and the Royal Infirmary, Edinburgh, and the Municipal General Hospitals and the Western, Royal, and Victoria Infirmaries, Glasgow, the number of scorbutics treated by them over the same period. The results (Table V) showed the same rise and fall as in the local observation, and it is suggested that the same reason also holds.

TABLE IV

Case No.	R.B.C. per c.mm. × 10^6					Hb%					M.C.V. ($\mu\mu$)					M.C.H. ($\gamma\gamma$)					M.C.H.C.					Test-meal Findings	Marrow Smears
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5		
	*10		10	18																							
1	3·08	4·34	4·55	4·9	—	55	80	85	85	—	91	83	81	79	—	25	26	26·3	24·2	—	28·5	28·5	32·2	31·5	—	Low free HCl	Normoblastic; few megaloblasts
	10	10	10																								
2	3·63	4·15	4·60	4·6	—	70	80	85	85	—	89	85	85	85	—	27	27	26	26	—	30·5	30·5	30·5	30·5	—	Normal	Normoblastic
	9	9	21																								
3	2·03	2·50	2·50	3·6	—	55	57	60	80	—	98	90	92	88	—	37·8	32	33·5	31·2	—	38·5	35·5	36·5	35·7	—	"	"
	15	12	25																								
4	2·46	3·38	3·93	4·6	—	65	70	78	98	—	83	85	85	85	—	37	29	27·8	29·7	—	35	33·8	33·5	34·2	—	Achlorhydria	Normoblastic; few megaloblasts
	14		19																								
5	3·20	3·60	—	—	4·04	45	52	—	—	75	—	—	—	—	—	19·8	20	—	—	26	—	—	—	—	—	—	—
	16	10	17																								
6	2·89	2·83	3·44	4·6	—	55	50	60	75	—	83	85	81·4	80	—	26·8	24·7	24·3	23·0	—	32	29·2	30	28·5	—	Low free HCl	Normoblastic
	13	9	21																								
7	1·84	1·90	2·20	4·2	—	50	50	55	85	—	97·5	92	91	86	—	38	37	35	28·5	—	39	36·8	38·5	34	—	Achlorhydria	Megaloblastic
	11		14																								
8	2·61	2·60	—	—	4·04	60	61	—	—	75	—	—	—	—	—	32	32·8	—	—	26	—	—	—	—	—	—	—
	18		18																								
9	3·02	3·04	—	—	3·64	77	77	—	—	78	—	—	—	—	—	36	36	—	—	32	—	—	—	—	—	—	—
	15		25																								
10	3·98	3·95	—	—	3·85	60	70	—	—	70	—	—	—	—	—	21·2	25	—	—	29	—	—	—	—	—	—	—

* Duration of each test in days, shown thus: 10 15

TABLE V

Aug.–July, Year	Col. 1: Edinburgh			Col. 2: Glasgow	
	Scurvy Nos.	% Medical Admissions	Rate per 100,000 Pop.	Scurvy Nos.	Rate per 100,000 Pop.
1937–38 ..	11	0·11*	2·35	24	2·14
1938–39 ..	23	0·25*	4·89	36	3·19
1939–40 ..	13	0·16*	2·75	28	2·48
1940–41 ..	27	0·36	6·55	40	3·83
1941–42 ..	45	0·61	10·52	66	6·31
1942–43 ..	26	0·35	6·08	50	4·78

Note.—Percentage incidence of scurvy to medical admissions in Glasgow hospitals not shown, as data of total medical admissions could not be obtained.

* Cf. 0.14% in Boston City Hospital over the period 1930-9 (Faulkner, 1941).

The close similarity between Edinburgh and Glasgow is capable of explanation by the fact that both have approximately the same intake of vitamin C per head of the population (personal

communication from the Ministry of Food). This intake is much below the average for all towns in Britain, and therefore the figures for vitamin C nutrition elsewhere are presumably better. The percentage incidence of scurvy of all medical cases in Edinburgh is much lower than in the hospital in which the investigation was made. This hospital serves mainly the elderly poor, whose vitamin C nutrition is probably lower than that of other classes of the population.

The improvement noted must be credited to the activities and propaganda of the Ministry of Food. Nevertheless it is suggested that so long as the scarcity of fruit exists the concessions at present enjoyed by children and expectant mothers should be extended to the elderly. Scurvy, which is only one evidence of faulty nutrition among the aged poor, will need more than propaganda for its abolition, and it is suggested that the provision for them of clean cheap lodgings, with canteen facilities and very discreet supervision, is one which local authorities might consider as the most practical step.

Clinically the only unusual complaint was lumbago, which it is suggested was the result of small deep haemorrhages in the muscles of the back, and indicates an unusual cause for this complaint in poorly nourished individuals.

The anaemias in the cases investigated showed no new factors so far as the peripheral blood was concerned. Although in no patient was the blood picture completely normal, in some it was very nearly so, and agreement is reached with the opinions of others that (*a*) anaemia and scurvy need not coexist in man (Crandon *et al.*, 1940); (*b*) when they do coexist the anaemia often bears no relation to the extent of the haemorrhages or the plasma ascorbic acid content (Croft and Snorf, 1939); and (*c*) the anaemia is varied in morphological type, being mainly normocytic (Parsons and Smallwood, 1935). The marrow findings were also similar to those recorded by others. These earlier findings were: (*a*) a gelatinous mass with failure of erythropoiesis (1 case) (Harris, 1927–8); (*b*) moderate hyperplasia with scattered small groups of erythroblasts and no fibrosis (1 case) (Mettier *et al.*, 1930); (*c*) one normal marrow, and one megaloblastic marrow associated with macrocytosis and achylia gastrica (Jennings and Glazebrook, 1938); and (*d*) one normal marrow and two showing diminished erythropoiesis (Israëls, 1943). The change from a megaloblastic to a normoblastic type with only dietary replacements was interesting. This has been noted in non-scorbutics with nutritional anaemia with (Groen and Snapper, 1937) and without (Napier *et al.*, 1938) free HCl in their gastric juices. The inference is that the marrow changes in scurvy are not specific.

As regards the cause of the anaemia of scurvy many views have been expressed. In 1930 it was thought confidently that there was a specific anaemia due to vitamin C deficiency (Mettier *et al.*, 1930). Since then, however, many observations have been made. The following are noteworthy: (*a*) vitamin C lack will not affect blood formation (Crandon *et al.*, 1940); (*b*) Hb and red cell regeneration with reticulocytosis occurs in scorbutics on a vitamin-C-free diet (Lozner, 1941; Ungley, 1938); (*c*) ascorbic acid has failed to cure an anaemia in experimental scurvy which did react to germinated oats (Aron, 1939); (*d*) vitamin C was necessary in one deficient individual to prevent the progress of the anaemia (Vaughan, 1934); (*e*) vitamin C is necessary in some deficient individuals before the anaemia will respond to treatment (Kenney and Rapoport, 1939; Dyke *et al.*, 1942). Belief in the need for vitamin C has therefore dwindled, and it has been suggested that the anaemia of scurvy is due to lack of other factors (Croft and Snorf, 1939). The present experience confirms points *a*, *b*, and *e*.

Lastly, as the anaemia of scurvy is due to a complex deficiency, with vitamin C acting only as an adjuvant, and as it is usually moderate in degree, the often-observed absence of reticulocytosis is not surprising. To obtain it, even where the anaemia is severe enough for a good reticulocyte response to be expected, it would be necessary to supply all deficient factors at once—a form of treatment rarely given.

Summary

The social and economic backgrounds in 53 adults with scurvy are detailed, with clinical features including blood changes and biochemical findings.

The causes of scurvy of this type are assessed as ignorance, apathy, and poverty.

The incidence of scurvy in the series is compared with the percentage for the main hospitals in Edinburgh and Glasgow for each year from mid-1937 to mid-1943. The significance of the figures is discussed.

A morphological classification of the anaemia of scurvy is made. The type of sternal marrow in six cases is indicated broadly. The anaemia is shown to be nutritional in origin and to be capable of alleviation in the absence of vitamin C, which is, however, thought to act as an adjuvant to the regenerating factors.

Suggestions are made for the elimination of scurvy.

We wish to acknowledge our indebtedness to Dr. W. G. Clark, medical officer of health, City of Edinburgh, for permission to publish this paper on patients in hospitals under his control; to the medical superintendents of the Edinburgh and Glasgow hospitals named in the text for their co-operation and active help in obtaining statistics; to Sir Jack Drummond, Scientific Adviser, Ministry of Food, for very useful confidential information on present-day vitamin C nutrition; and to Miss Agnes Hughes, ward sister, Eastern General Hospital, Edinburgh, for supervising the majority of patients and controlling the experimental diets.

REFERENCES

Abbasy, M. A., Harris, L. J., Ray, S. N., and Marrack, J. R. (1935). *Lancet*, **2**, 1399.
Aron, H. C. S. (1939). *J. Nutrit.*, **18**, 375.
Crandon, J. H., Lund, C. C., and Dill, D. B. (1940). *New Engl. J. Med.*, **223**, 353.
Croft, J. D., and Snorf, L. D. (1939). *Amer. J. med. Sci.*, **198**, 403.
Dyke, S. C., Della Vida, B. L., and Delekal, E. (1942). *Lancet*, **2**, 278.
Eddy, W. H., and Dalldorf, G. (1941). *The Avitaminoses*, p. 350, Baltimore.
Falk, G., Gedda, K. O., and Göthlin, G. F. (1932). *Skand. Arch. Physiol.*, **65**, 24.
Faulkner, J. M. (1941). *New int. Clin.*, **3**, 1.
Groen, J., and Snapper, I. (1937). *Amer. J. med. Sci.*, **193**, 633.
Harris, H. A. (1927–8). *Quart. J. Med.*, **21**, 499.
Harris, L. J., and Abbasy, M. A. (1937). *Lancet*, **2**, 1429.
Hess, A. F. (1920). *Scurvy, Past and Present*, Philadelphia.
Israëls, M. C. G. (1943). *Lancet*, **1**, 170.
Jennings, G. H., and Glazebrook, A. J. (1938). *British Medical Journal*, **2**, 784.
Kenney, A. S., and Rapoport, M. (1939). *J. Pediat.*, **14**, 161.
Lozner, S. L. (1941). *New Engl. J. Med.*, **224**, 265.
McMillan, R. B. (1943). *British Medical Journal*, **2**, 229.
Mettier, S. R., Minot, G. R., and Townsend, W. C. (1930). *J. Amer. med. Ass.*, **95**, 1089.
Napier, L. E., *et al.* (1938). *Indian med. Gaz.*, **73**, 385.
Orr, J. B. (1937). *Food, Health and Income*, 2nd ed., London.
Parsons, L. G., and Smallwood, W. C. (1935). *Arch. Dis. Childh.*, **10**, 327.
Ungley, C. C. (1938). *Lancet*, **1**, 875.
Vaughan, J. M. (1934). *Trans. roy. Soc. trop. Med. Hyg.*, **27**, 533.
Wintrobe, M. M. (1942). *Clinical Haematology*, Philadelphia.

URTICARIAL REACTIONS AND DESENSITIZATION IN ALLERGIC RECIPIENTS AFTER SERUM TRANSFUSIONS*

BY

KATE MAUNSELL, M.D.Kiel, L.R.C.P.Ed.

While a great deal of research has been done on the haemolytic and the pyrogenic transfusion reactions, less attention has been paid to the so-called "allergic reactions." They are said to occur in about 1% of transfusions (Wiener *et al.*, 1941; Hoxworth and Skinner, 1941), and the incidence seems to be the same whether blood or plasma or serum is administered.

Immunologically the word "allergy" covers the changes in reaction towards increased and reduced sensitivity due to the presence of acquired antibodies. Clinically, however, the term "allergic transfusion reaction" is used, in a more restricted sense, for the occurrence of such phenomena as urticaria, angioneurotic oedema, bronchial asthma, and, in rarer instances, shock. It is commonly assumed that the cause of these syndromes lies in the transfusion of blood from the allergic donor to the normal recipient (*Lancet* editorial, 1941; Colonnel, 1943). Scarcely any attention has been paid to the role of the allergic recipient in the production of transfusion rashes, and only one case report of an allergic recipient developing a transfusion rash was found in the literature (Stewart and Bates, 1938). Neither is it yet established whether the first transfusion sensitizes or desensitizes the reacting recipient for subsequent transfusions with human material. Whereas Györgi and Witebsky (1929), Wiener *et al.* (1941), and Kilduffe and De Bakey (1942) believe in the development of an allergic supersensitivity in the interval between repeated transfusions, Young (1942) reported apparent desensitization.

* A report to the Medical Research Council from the S.W. London Blood Supply Depot.

The chief purpose of the present research was therefore to investigate the response of the allergic recipient to injection of human serum and to observe his behaviour to repeated transfusions. The investigations have been carried out in two sections. The first deals with skin tests by allergens and serum, the second with serum transfusions.

One type of human allergy, "atopy," has been investigated in regard to transfusion reactions. The term "atopy" has been introduced by Coca *et al.* (1931) to separate a certain group of allergic manifestations from the hypersensitiveness of infection and horse-serum disease. The term designates such forms of hypersensitiveness as urticaria, bronchial asthma, and vasomotor rhinitis, which have a hereditary basis and in which the hypersensitivity is characterized by special antibodies, the reagins. Reagins are present in the circulating blood, and are capable of sensitizing mucous membrane and skin in such a way that the minute vessels quickly produce an urticarial reaction on contact with the atopens. The best-known atopens are pollen, dust, milk, and egg. Reagins are transferable to normal individuals, sensitizing their skin and their mucous membranes.

Cases

The subjects were divided into three different groups.

Group I: Cases of Bronchial Asthma and Hay-fever (Atopic Types).—A family history of allergy was usually present. The patients, whose ages ranged from 11 to 43 years, gave positive skin reactions to one or more of the tested atopens. Reagins could be determined by passive transfer.

Group II: Cases of Bronchial Asthma (Non-atopic Types).—That this group is distinct from the first is shown by the usual lack of an allergic family history, the higher age group of the patient, negative tests with atopens, no determination of reagins, and the high incidence of chronic respiratory-tract infection.

Group III: Normal Controls.—These subjects gave no allergic family history and did not complain of any atopic symptoms. Atopic tests were negative.

Persons with latent allergy were excluded in this study—i.e., subjects with positive skin reactions but with no clinical history of allergic phenomena.

Part I: Skin Tests

Method.—Dried pooled human serum was reconstituted to normal strength with distilled water and filled into sterile test-tubes of approximately 2 c.cm. content. These test-tubes were kept frozen at 5° F. till required. On the day of use one or more of these tubes were thawed out and a sterile tuberculin syringe was charged with the fluid. To avoid any risk of contamination each tube was discarded after having been opened. Each syringe was used for one tube only, and after use was cleansed in chromic acid and resterilized. For the test, two intracutaneous injections, each of 0.05 c.cm. of the reconstituted serum, were made into the skin of the back in parallel with extracts of mixed inhalants and food in appropriate concentrations and 0.5 c.cm. of carbol saline. Whenever it seemed necessary, single atopic extracts were used.

Estimation of the Skin Reaction for Serum.—The intradermal injection of 0.05 c.cm. of serum produced a raised bleb of 0.8 cm. diameter in each person immediately. A bright flare of about 2 in. diameter occurred around this site of injection and faded after 10 to 15 minutes. A slight wheal formation was often noted as a semilunar swelling of the injected bleb. A reaction of this kind was recorded as negative. The reaction was regarded as positive when the erythema covered a larger area and was still present after twenty minutes, and when, simultaneously, the wheal developed in the whole circumference of the bleb. The size of the wheal was measured after 30 minutes by pressing a glass slide against the skin, and the outlines thus demarcated were arbitrarily recorded as:

Reaction +	Largest diameter of wheal:	1–1·5 cm.
,, ++	,, ,, ,,	1·5–2 cm.
,, +++	,, ,, ,,	more than 2 cm.

It should be made quite clear that a positive reaction was estimated by a quantitative difference and not by a qualitative variation. The method was not found reliable enough to estimate fine gradations, as even with careful work a different reaction was sometimes obtained from two equal injections. Two to three hours after the injection the wheal turned brownish. It usually disappeared within 24 hours. Late reactions in the form of distinct papules were observed rarely when working under strictly sterile conditions.

Results

Series 1: Sensitiveness to Reconstituted Dried Pooled Human Serum (Table I).—Group I: Of 52 atopic patients 40 (77%) gave positive serum tests, 3 of them being +++, 12 ++, and 25 +. Group II: Of 25 persons only 5 (20%) showed positive serum reactions; they were of the low grade. Group III: Of 50 persons 10 (20%) gave positive serum reactions, all of them being of the low grade.

TABLE I.—*Skin Reactions to Intradermal Tests with Reconstituted Dried Pooled Human Serum*

	Group I: Br. Asthma, etc.; Atopic Type	Group II: Br. Asthma; Non-atopic Type	Group III: Normal
No. tested	52	25	50
Negative reactions ..	12	20	40
Positive reactions:			
+	25	5	10
++	12 } 40	— } 5	— } 10
+++	3	—	—

It will be noted that there was a striking contrast between the atopic and non-atopic subjects in their susceptibility to serum tests.

Series 2: Sensitiveness to Fresh Unpooled Human Serum (Autoserum and Isoserum).—Blood was collected into sterile centrifuge tubes from 36 donors and kept at 4° C. for one day. The serum was then pipetted off after centrifugation. It was kept frozen solid until used for testing, which was usually done two days after bleeding. Thirty-six subjects of the atopic and non-atopic types were tested with their own fresh serum (autoserum), with three or four fresh sera from other individuals—also of atopic and non-atopic groups (isosera)—and with one pool of dried serum. Autosera did not cause a reaction in any of the 36 recipients. Isosera, on the other hand, did give reactions in some cases, which also reacted to pooled serum. These positive cases were, as before, in the main atopic subjects. In any one person the reactions to various individual sera were not all equally strong. Furthermore, a single serum which gave the strongest response in recipient X. did not necessarily do so in recipient Y., and vice versa. Positive reactions were not obtained more often with sera from atopic donors than with sera from non-atopic subjects.

Series 3: Sensitivity to Fresh Human Sera of the Four Main Blood Groups.—Three sets of sera were obtained in the same way as in Series 2. A set consisted of four sera—one each of the four main blood groups, AB, A, B, O. For testing each set 12 recipients (both atopic and non-atopic) were chosen; so that there were three individuals of each of the blood groups. Some of the recipients, especially of groups B and AB, were used for testing more than one set, but on different days. Positive reactions occurred in 11 recipients—1 out of 6 AB, 4 out of 12 A, and 6 out of 12 O. The sensitive individuals gave more or less strong positive reactions with all four sera of the main blood groups. The results therefore show no relation between the blood groups of donors and recipients. Of the 11 serum-sensitive recipients 9 suffered from bronchial asthma and hay-fever.

Part II: Transfusions

The fact that 80% of atopic individuals were positive to serum tests suggested that urticarial rashes after serum transfusions might occur more often in such subjects than in other persons.

Method.—Two pools of dried serum, each consisting of about 60 bottles, were used so that a number of atopic subjects and non-atopic controls could be transfused with the same serum. One bottle was reconstituted to normal strength with 400 c.cm. of distilled water. The serum was administered as soon as the dried powder had dissolved completely. Adjustment of the duration of the transfusion to 25 to 30 minutes was aimed at, but in patients who were known to have a high degree of atopic sensitiveness the first transfusion was given at a much slower rate. Whenever a rash appeared during the administration of serum the transfusion was stopped immediately. All persons transfused had been tested previously (Part I). If possible, the test injection of pollen, dust, etc., was avoided on the day of the transfusion, whereas serum tests were frequently applied simultaneously with the transfusion. The transfused persons were under constant observation during the transfusions, and were seen at least two to three times in the next three hours. The temperature and pulse were recorded half-hourly. No transfusions were administered during attacks of bronchial asthma.

Estimation of the Transfusion Reaction.—Up to half a dozen solitary small wheals occurred so often during or after transfusion that they were not considered to be a transfusion reaction. The features of what was regarded as a positive transfusion reaction were a large number of solitary white wheals surrounded by red flares, or many wheals occurring in large erythematous areas. Sometimes the wheals ran together and formed large white oedematous zones. The wheals tended to occur on the back, round the neck, and on the face. It was often noted that the first whealing appeared in areas in which the skin was subjected to pressure. The wheals were usually preceded by itching, which increased in intensity so long as fresh wheals were forming in the skin. In some patients running of the nose, streaming of the eyes, and tightness of the chest

occurred simultaneously. The general condition of the patient was in the majority of cases not affected by the transfusion reaction and no adrenaline was necessary to control the symptoms. Attacks of bronchial asthma were rare, but they were observed even in subjects who had previously suffered only from allergic rhinitis. Very occasionally the rash was accompanied by a marked fall of blood pressure and increase of pulse rate. This state of collapse was successfully treated with adrenaline. The transfusion reactions were recorded as:

Reaction	+	.. ..	Erythematous patches and 6 to 20 isolated wheals
"	++	.. ..	Erythemata and more than 20 isolated wheals
"	+++	..	Erythemata and numerous confluent wheals
"	++++	..	Collapse in conjunction with rash

The time of onset of a transfusion reaction was in distinct relation to the severity of the attack, the strongest rashes occurring after the shortest incubation period. The majority appeared 10 to 30 minutes after the end of the transfusion, but in a few cases the outbreak was observed one to two hours later. The most severe reactions came on during the administration of the fluid. The duration of a weak reaction was not longer than half an hour, but stronger rashes lasted one to two hours. Rigor and rise of temperature occurred independently of the rashes.

TABLE II.—*Urticarial Reactions after Injection of Reconstituted Dried Serum*

Case No.	Age	Reaction to Skin Tests with				Reactions to Transfusions		
		Known Atopens			Serum	1st	2nd	3rd
		Inhalants		Ingestants				
		Pollen	Dust, Feathers, etc.					
Gp. I:								
1	26	−	++	++++	+	++++	+	±
2	43	−	++	−	+	++++	+	±
3	16	−	+++	+	+	+++	+++	−
4	20	−	++	++++	++	+++	+	−
5	11	++	+++	+	±	+++	+	++
6	22	−	++	+	+	++	−	−
7	23	−	++	++++	++	++	−	−
8	39	++	−	−	++	+	−	−
9	26	−	+	−	+	+++	−	
10	25	−	++	−	+	++	−	
11	35	−	++	−	+	+	−	
12	19	+++	++	++	++	+++		
13	18	++	++	+	+	++		
14	35	++	−	−	+	+		
15	22	++	−	−	+	−	−	
16	27	−	++	−	−	−	−	
17	30	−	++	−	++	−	−	
Gp. II:								
18		−	−	−	−	−	−	−
19–23		−	−	−	−	−	−	
24–26		−	−	−	−	−		
Gp. III:								
27–28		−	−	−	−	−	−	
29–38		−	−	−	−	−		

Results

Series 4: Reactions to First Transfusions (38 Cases, Table II).—17 atopic subjects of Group I, 9 patients of Group II, and 12 persons of Group III were transfused each with 400 c.cm. of reconstituted dried pooled serum. *Group I:* Of the 17 patients 14 developed an urticarial rash (2 ++++, 5 +++, 4 ++, 3 +). Only two of the recipients had reactions of the violent type. One occurred in a boy aged 10, with bronchial asthma, who was sensitive to dust and related inhalants. The urticarial rash developed during the transfusion, after 300 c.cm. had been administered. The boy shortly afterwards complained not only of an attack of asthma but also of severe abdominal cramps. These were accompanied by a sudden fall of blood pressure. The reaction was controlled by adrenaline. The other alarming incident occurred in a young woman aged 26. She suffered from bronchial asthma and was extremely sensitive to egg. After 100 c.cm. of serum had been given her eyelids started to itch and swell. The transfusion was stopped, but the patient became deeply cyanosed. The pulse was 140 and the blood pressure 80/50. She recovered from the atopic shock after treatment with adrenaline and cardophyllin, but suffered from an asthmatic attack for the next three hours. Both these cases had only moderately strong positive serum skin reactions, whereas other persons with much more pronounced skin reactions produced general manifestations of a weaker degree. *Groups II and III:*—Twenty-one subjects were transfused, and no rash was observed in any of the cases.

Series 5: Reactions to Subsequent Transfusions (22 Cases, Table II).—The same pool which had been used for the first transfusion was administered on a second and a third occasion. The interval between the transfusions was usually a fortnight. *Group I:*—A second transfusion was given to 14 patients, 11 of whom had developed a rash on the first occasion. After the second treatment 10 out of these 11 showed definite signs of desensitization: 6 subjects had no reaction at all, 4 got a slight rash, and only 1 reacted in the same way as on the first occasion. A third transfusion was given to 8 subjects, all of whom had produced urticaria when transfused for the first time. Of these cases 7 demonstrated the decrease of sensitivity—5 did not react at all, and 2 showed some erythematous areas but no wheals. Only one boy, aged 11, again developed a rash. Three patients who had been desensitized by repeated transfusions of serum from the same pool were re-transfused with serum of other pools. No reaction occurred. Thus desensitization had been established not only for the pool which had been given during the course of transfusions but also for others. Three patients who did not respond to the first transfusion were equally negative on re-transfusions. *Groups II and III:*—Eight cases were re-transfused and were negative as on the first occasion.

The marked decrease of urticarial rashes in sensitive individuals on repeated transfusions demonstrated the desensitizing power of serum transfusions.

Skin Tests Before and After Transfusion.—Two tests were made with pooled serum. The first was carried out in the recipient 20 minutes before starting the transfusion, and the second was performed towards the end. There was hardly any difference in the reaction in those cases which failed to produce a rash. In those individuals, however, who subsequently developed a rash, the second reaction was about five times as large as the first. It was formed not only by increase of the original bleb but also by coalescence of small wheals which developed in the area of the erythema. This phenomenon, when observed, preceded a general reaction by 10 to 30 minutes.

Discussion

The occurrence of urticaria after transfusion is accepted mostly, without further comment, as an allergic reaction, but the validity of such an assumption seemed doubtful. The literature on this subject is extremely vague. First, skin tests with human serum, which have been carried out occasionally in cases of transfusion rashes to support the allergic theory, usually lack the necessary controls. Secondly, only single cases of transfusion rashes have been reported, and no experiments on a larger scale are found in the literature. Thirdly, hardly any evidence has been published regarding the changes of reaction towards increased or reduced sensitivity after serum transfusions. The results of the present investigations throw some light on the following points.

1. *Local reactions* caused by intradermal injections of serum are indistinguishable in their features of wheal and erythema from those occurring after tests with the known atopens. It seemed plausible, therefore, that this reaction could be looked upon as evidence of allergic sensitiveness, but it had to be kept in mind that not all urticarial reactions are manifestations of allergy. The visible reactions to many substances like histamine, peptone, atopens, and serum are extraordinarily similar. Their relation lies in the common point of attack—the capillary wall. In their mechanism they differ profoundly. Histamine and peptone, as representatives of one group, act directly on the capillary wall. They act in any person. The atopens, on the other hand, produce vasodilatation indirectly as a sequel to their union with their reagins. Thus they react only in sensitized tissues. The present investigations produced evidence in favour of the assumption that local serum reactions are an atopic manifestation. It was shown that positive serum reactions were seldom obtained in normal subjects, but frequently in those individuals who gave positive reactions to the known atopens.

2. The *general urticarial reactions* following serum transfusion are related, in the similarity of the clinical features, to the condition caused by intravenous injections of atopens—e.g., pollen. The onset of the rash is sudden and the duration short. It may be accompanied by rhinitis, bronchial asthma, severe headaches, intestinal spasms, and fall of blood pressure. The same considerations, however, as discussed for the local reaction hold true for the general eruption. Not all attacks of urticaria, asthma, etc., are manifestations of atopy, and the clinical features alone are therefore not sufficient evidence for the atopic aetiology of the transfusion rashes. It was shown by this study that the serum rashes after transfusions most probably constitute atopic phenomena, as they were not observed in the normal controls, but only in the known atopic subjects.

Thus it seems likely that the atopic sensitiveness of the recipient is the cause of these serum reactions, and it is

surprising that the majority of case reports in the literature refer only to the allergic donor (*Lancet* editorial, 1941). Although the role of the allergic recipient is mentioned sometimes in discussions on allergic transfusion reactions (Polayes and Lederer, 1932 ; Kilduffe and De Bakey, 1942) only one case report of an allergic recipient developing a transfusion rash was found in the literature (Stewart and Bates, 1938). Böttner (1924), Brem *et al.* (1928), and Price (1934), considering the sensitiveness of the recipient as the cause of transfusion reactions, do not refer to urticaria and related syndromes, but to febrile reactions. Duke and Stofer (1924), who are also frequently quoted as having observed an allergic reaction in a sensitive subject after transfusion, do not describe a typical allergic syndrome, but a coma.

Nothing is known of the character or source of the atopic substances in human serum. The fact is notable that fresh autosera failed to react even in highly serum-sensitive subjects, and positive skin reactions were observed only with isosera or with serum from pools. The same observation was made by Chant and Gay (1927) in a fairly large series of cases. This may indicate that the reacting substances are foreign to the human body. Furthermore, it is interesting that a serum-sensitive person does not respond equally strongly to different human sera.

Levine and State (1942) claim that the soluble A and B substances produce the positive serum reaction and the serum rashes. No confirmation of their observations has yet been published. Nor was it obtained by the results of the present skin tests with A and B sera.

There is some reason to believe that the presence of extraneous atopens—e.g., food or inhalants—in the transfused serum may be the cause of the serum reactions in sensitive subjects. In this respect Walzer's and Freeman's researches are noteworthy. Walzer (1927) sensitized small areas of normal skin passively with serum from persons who were highly food-sensitive. When the normal recipients, on the following day, ate the corresponding food, the sensitized site responded promptly by producing a wheal and an erythema. This proved the absorption of food atopens from the non-allergic digestive tract. The absorption of pollen atopen from the non-allergic mucous membrane of the nose was shown by Freeman (1925) in a similar way.

3. *Desensitization.*—In the present series 10 out of 11 serum-sensitive subjects, after recovery from a transfusion rash, showed a condition of desensitization on re-transfusion. Thus, on repetition, the administration of serum caused no urticaria or only the slightest rashes in subjects who had reacted previously. The reaction to the first serum transfusion cannot be due to nervous excitement, as several cases had preliminary saline transfusions without reaction. The refractoriness may only be temporary. It was, however, still present in several cases transfused three months after desensitization had been established. The refractory state of transfused atopic subjects resembles the desensitization in anaphylaxis, since sensitive animals surviving a sufficiently strong dose of their antigen do not react to a second dose of the same antigen. That the desensitizing effect can also be produced by whole blood was shown by Young (1942). She investigated the reactions of three subjects who responded with a transfusion rash when receiving blood for the first time. When blood of another donor was used for repetition of the transfusion a rash developed again. On the other hand, when using the same donor's blood for a second time no reaction occurred. Apart from these cases no definite reports on desensitization by transfusion could be found in the literature. Concurrently with the change of reaction to serum there occurred in bronchial asthmatics a marked improvement of the general condition and a decrease of or even a freedom from asthmatic attacks. This may be due to immunological changes. On the other hand, it may be due entirely to psychological factors, as it cannot be denied that transfusion with "normal serum" means in practice for every patient some psychological impression.

Summary

Pooled human serum, dried and then reconstituted, when used for skin tests gave positive reactions in 77% of atopic subjects, but in only 20% of non-atopic. Sera from single individuals also gave positive reactions in the same recipient. Autosera failed to react. The skin-reacting properties of serum were independent of the group-specific substances.

On transfusion, such serum caused "allergic" reactions in 14 out of 17 atopic recipients, but in none of the 21 non-atopic.

On repeated transfusion in 14 atopic and in 14 non-atopic cases no sensitization occurred.

On repeated transfusion, desensitization was observed in 10 out of 11 serum-sensitive atopic cases.

In the course of the follow-up of patients who received serum transfusions a number of cases of homologous serum jaundice were observed. In some of the cases the hepatitis was mild (Loutit *et al.*, 1944), in others as yet unreported acute hepatic necrosis occurred. Further attempts at desensitization of allergic patients with human serum, therefore, are not at present advised in this country.

I wish to thank Dr. A. N. Drury for suggesting this line of research and Dr. J. L. Livingstone and other members of the E.M.S. medical staff of Sectors 8 and 9 for their co-operation in investigations of patients under their care. I am especially indebted to Dr. J. Loutit, Director of the S.W. London Blood Supply Depot, for his great help and interest at every stage of this study.

REFERENCES

Böttner, A. (1924). *Dtsch. med. Wschr.*, **50**, 599.
Brem, W. V., Zeiler, A. H., and Hammack, R. W. (1928). *Amer. J. med. Sci.*, **175**, 96.
Chant, E. H., and Gay, L. N. (1927). *Johns Hopk. Hosp. Bull.*, **40**, 63.
Coca, A. F., Walzer, M., and Thommen, A. (1931). *Asthma and Hayfever in Theory and Practice*, Chas. C. Thomas, Springfield, Ill.
Colonnel, W. J. (1943). *U.S. Nav. med. Bull.*, **41**, 1356.
Duke, W. W., and Stofer, D. D. (1924). *Med. Clin. N. Amer.*, **7**, 1253.
Freeman, J. (1925). *Proc. roy. Soc. Med.*, **18**, Laryngol. Sect., 29.
Györgi, P., and Witebsky, E. (1929). *Münch. med. Wschr.*, **76**, 195.
Hoxworth, P., and Skinner, C. (1941). *Arch. Surg.*, Chicago, **42**, 321, 480, 498.
Kilduffe, R. A., and De Bakey, M. (1942). *The Blood Bank and the Technique and Therapeutics of Transfusions*, H. Kimpton, London.
Lancet (1941). **2**, 163.
Levine, M., and State, D. (1942). *J. Amer. med. Ass.*, **120**, 275.
Loutit, J., *et al.* (1944). In the press.
Polayes, S. H., and Lederer, M. (1932). *J. Lab. clin. Med*, **17**, 1029.
Price, A. S. (1934). *Rev. Gastroent.*, **1**, 192.
Stewart, W., and Bates, T. (1938). *Lancet*, **1**, 319.
Walzer, M. (1927). *J. Immunol.*, **14**, 143.
Wiener, A. S., Oremland, B. H., Hyman, M. A., and Samwick, A. A. (1941). *Amer. J. clin. Path.*, **11**, 102.
Young, R. E. S. (1942). *Amer. J. Surg.*, **55**, 607.

INCIDENCE OF BLEEDING GUMS AMONG R.A.F. PERSONNEL AND THE VALUE OF ASCORBIC ACID IN TREATMENT

BY

W. P. STAMM, M.B., B.S.
Wing Commander

T. F. MACRAE, D.Sc., Ph.D.
Wing Commander

AND

SIMON YUDKIN, Ph.D., M.B., M.R.C.P.
Flight Lieutenant

(R.A.F. Institute of Pathology and Tropical Medicine)

Reports appearing in medical journals recording good results obtained by the treatment of various forms of gingivitis with ascorbic acid led to a very large consumption of that substance in the Royal Air Force for the treatment of all forms of bleeding gums. An investigation was therefore carried out between October, 1941, and May, 1942, to discover the incidence of bleeding gums in the R.A.F. and to assess the value of ascorbic acid in the treatment of this condition.

Experiment 1

This experiment took place at three R.A.F. stations during October and November, 1941. At each station all personnel available were examined, except those already taking ascorbic acid, those being treated for acute ulcerative gingivo-stomatitis, and those with no teeth. About two-thirds of those examined were airmen ; the remainder were airwomen and soldiers, with a few officers, sergeants, and naval personnel. The majority of subjects in this and later experiments were between the ages of 18 and 25. All those included in this experiment had been living on Service rations for six months or more. An estimation was made of the ascorbic acid content of the airmen's food during the experimental period and in the early spring of 1942.

Methods

The gums of the lower jaw were examined for bleeding after digital massage. Three degrees of bleeding were recognized and noted: (*a*) bleeding just perceptible at one or two points after firm massage; (*b*) bleeding more easily produced or bleeding from several points; (*c*) bleeding apparent on inspection or at the slightest touch. Where gums showed bleeding, ulceration and redness were also looked for, being classified as "absent," "present," or "marked."

Alternate members of the group with bleeding gums were given ascorbic acid tablets and dummy tablets flavoured with tartaric acid. The dose of ascorbic acid was 200 mg. daily for 7 days, followed by 100 mg. daily for 14 days; the dummy tablets were similar in appearance and taste, and were given in similar numbers. Distribution of the tablets was conducted under the supervision of section N.C.O.s, to whom each man had to report daily. The tablets had to be chewed and swallowed in the presence of the N.C.O.s, who kept records of attendances. The dental officer at each station was supplied with a list of those in the experimental group and was asked not to carry out any dental treatment on them during the period of the test.

At the end of the experimental period of three weeks all subjects given ascorbic acid and dummy tablets were re-examined. The original notes were not available to the examiner, so that he could not be influenced by his previous observations or by a knowledge of which tablets had been given. After examination each individual was asked whether he had noticed any improvement or deterioration during treatment. For various reasons not connected with the experiment about 27% of the subjects were not available at the second examination.

The ascorbic acid content of the food as served to the airmen in the messes was determined by the dichlorophenol-indophenol technique (Harris and Oliver, 1942) during one week of the experimental period at each station. The average weight of each item consumed by the personnel in their messes at each of the 28 meals served during the week and the ascorbic acid content per unit weight of each of these items at the time of serving were determined. The average intake of ascorbic acid per airman at each station was calculated from these data. This determination of the ascorbic acid intake was repeated at the same stations in March, 1942, in order to discover the degree of seasonal variation.

Results

The total number of personnel examined at the three stations was 1,791, and 344 of these had some degree of bleeding of the gums—a percentage of 19.2. The incidence varied between the stations and between different classes at the same station, but not to any significant extent (Table I).

TABLE I.—*Incidence of Bleeding Gums at the Various Stations and in the Different Classes of Personnel. (Experiment 1)*

Station	Number Examined	Number with Bleeding Gums	Percentage with Bleeding Gums
1	521	101	19·4
2	708	111	15·7
3	562	132	23·5
Total ..	1,791	344	19·2

Class of Personnel	Number Examined	Number with Bleeding Gums	Percentage with Bleeding Gums
Airmen ..	1,191	215	18·0
Airwomen ..	271	57	21·0
Sergeants ..	68	22	32·4
Officers ..	10	3	30·0
Army	215	45	20·9
Navy	36	2	5·5
Total ..	1,791	344	19·2

Of those with bleeding gums 250 completed the test—119 receiving ascorbic acid and 131 dummy tablets. Table II summarizes the effects of the two treatments on the bleeding, ulceration, and redness of the gums. There was no significant difference between the effects produced by ascorbic acid and by the control tablets; the apparent better effect of the latter tablets was probably due to chance.

TABLE II.—*Effect of Treatment with Ascorbic Acid on Bleeding, Ulceration, and Redness of Gums. (Experiment 1)*

	Treated with Ascorbic Acid				Treated with Dummy Tablets			
	Improved	No Change	Deteriorated	Total	Improved	No Change	Deteriorated	Total
Showing bleeding No.	43	61	15	119	53	64	14	131
Showing bleeding %	36	51	13	—	40·5	49	10·5	—
No. showing ulceration	3	19	1	23	10	14	1	25
No. showing redness	36	42	8	86	51	33	8	92

Ulceration developed during the experiment in 5 of the 119 treated with ascorbic acid and in 9 of the 131 given dummy tablets; redness developed in 6 of the ascorbic acid group and in 9 of those receiving dummy tablets. The effects of the treatments were worked out for each station and for each class of personnel, but as the results showed no significant difference the details have been omitted. Subjective feelings of improvement usually bore no relation to the objective signs, but when there was any marked change in the degree of bleeding this had usually been noticed when the teeth were being cleaned.

The results of the estimations of ascorbic acid intake are summarized in Table III. The average daily intake of the airmen was about 26 mg. each during the autumn and 17 mg. during the early spring.

TABLE III.—*Average Daily Intake of Ascorbic Acid by Airmen in their Messes at Three R.A.F. Stations. (Experiment 1)*

Station	First Series of Tests (Autumn)		Second Series of Tests (Spring)	
	Test Period	Ascorbic Acid Intake (mg. per man daily)	Test Period	Ascorbic Acid Intake (mg. per man daily)
1 ..	8/10/41 to 15/10/41	25·5	3/3/42 to 9/3/42	19·0
2 ..	21/10/41 to 28/10/41	27·0	11/3/42 to 17/3/42	15·2
3 ..	5/11/41 to 12/11/41	24·8	19/3/42 to 25/3/42	16·3
Average:		25·8		16·8

The main cause of the difference between the ascorbic acid intake in the autumn and that in the spring was the ascorbic acid content of the potatoes. Potatoes contributed an average of about 11 mg. of ascorbic acid per man daily in the autumn, but only about 6 mg. in the spring. Potatoes were the most important source of ascorbic acid in the autumn, but in early spring greenstuffs provided the largest amount. Taking the two test periods together, potatoes and greenstuffs contributed about equal amounts, and between them supplied about three-quarters of the total ascorbic acid, the remainder being derived from root vegetables, the small amounts of fruit served, jam, and a number of less important sources.

Experiment 2

At another R.A.F. station 571 airmen were examined and treated for bleeding gums during April, 1942. The same methods were used as in experiment 1, except that special note was made of the presence of "sponginess" of the gums and that the dosage of ascorbic acid was slightly different: in this second experiment 150 mg. was administered daily for 20 days. The dietary history of the personnel of this station differed from that of the personnel of experiment 1, as the men had received Service rations for periods of only one to six weeks before the beginning of the experiment; previously they had lived in civilian billets and received civilian rations.

Results

The number with bleeding gums was 122—an incidence of 21.3%. The effects of the treatments on all cases of bleeding gums are given in Tables IV and V. Those with and without "sponginess" of the gums have been separated into two groups, and the effects of the two treatments have been worked out for each group. Six of those with bleeding gums failed to complete the experiment.

TABLE IV.—*Effect of Treatment with Ascorbic Acid on Bleeding Gums. (Experiment 2)*

Treatment	Improved		No Change		Deteriorated		Total
	No.	%	No.	%	No.	%	
Ascorbic acid	17	25	37	54	14	21	68
Dummy tablets	22	46	14	29	12	25	48

TABLE V.—*Comparison of Effects of Treatment on Bleeding Gums with and without "Sponginess." (Experiment 2)*

Treatment	"Sponginess" Present					"Sponginess" Absent				
	Improved		Deteriorated or no Change		Total	Improved		Deteriorated or no Change		Total
	No.	%	No.	%		No.	%	No.	%	
Ascorbic acid	9	33	18	67	27	18	44	23	56	41
Dummy tablets	8	47	9	53	17	23	74	8	26	31

Again the dummy tablets were rather more effective than the ascorbic acid, but the difference was not statistically significant. Improvement was shown by a significantly larger proportion of those showing no "sponginess" compared with those with "sponginess" present, but the better results were independent of the form of treatment.

Experiment 3

This experiment was carried out during April and May, 1942, at the same station as experiment 2, as part of a more general nutritional survey. Six hundred airmen, other than those taking part in experiment 2, were examined three times at intervals of three weeks, and at each examination the presence or absence of bleeding gums was noted. After the initial examination the men were divided into several groups, which were given different vitamin supplements and control tablets.

Results

The incidence of bleeding gums on initial examination was 20.3% —a figure similar to those found in the two previous experiments. The results of treatment with ascorbic acid and other vitamin supplements showed no significant difference. It therefore seems justifiable to consider the observations made on the 600 airmen as a whole.

There was almost exactly the same percentage showing bleeding gums at each examination, and the distribution of the degrees of bleeding was similar on each occasion (Table VI). On the other hand, only 57 of the 122 who showed bleeding at the initial examination did so at each of the two subsequent examinations.

TABLE VI.—*Number with Bleeding Gums at Three Examinations of 600 Airmen at Intervals of Three Weeks. (Experiment 3)*

	Degree of Bleeding*			Total	
	a	*b*	*c*	Number	% of 600
1st examination ..	53	50	19	122	20·3
2nd " ..	42	53	16	111	18·5
3rd " ..	52	53	13	118	19·7

*The degrees are defined in the account of experiment 1.

At the second examination the gums of 48 subjects (39% of the original 122) had stopped bleeding entirely—about the same percentage as showed improvements in experiments 1 and 2—but at the same time 37 of the rest of the 600 had started to bleed. Similarly, at the third examination 34 had stopped bleeding, while 41 had started. It is thus apparent that there is a considerable normal variation irrespective of treatment.

It was observed in this experiment, as in experiment 2, that those gums with "sponginess" tended to remain unchanged from one examination to the next. The majority of those who showed improvement during the test period had fairly firm, pale gums with only a little bleeding on massage. Neither type showed greater improvement with any particular treatment.

Discussion

In frank scurvy, swollen spongy bleeding gums are a characteristic sign. Most investigators who have treated bleeding gums with ascorbic acid have reported improvement in at least a portion of those affected, and have inferred that bleeding gums may be an early sign of ascorbic acid deficiency (Roff and Glazebrook, 1939; Campbell and Cook, 1941, 1942; Blockley and Baenziger, 1942; Stuhl, 1943; Kent, 1943).

There is no evidence from the early descriptions of scurvy (Hakluyt, 1600; Lind, 1753) that the gums began to bleed before the other signs and symptoms were seen; and during the investigations on experimental human scurvy by Crandon, Lund, and Dill (1940) the gums did not become swollen and haemorrhagic before other signs of scurvy appeared. Work by Burrill (1942) showed no relationship between low blood plasma vitamin C levels and the presence of gingivitis, and McNee and Reid (1942) found patients with sore bleeding gums to be no more "unsaturated" than others.

In the present experiments estimation of the intake of ascorbic acid showed that even in the autumn, when it might be expected to be high, the amount in the food served to the airmen on three R.A.F. stations was about 25 mg. daily, or slightly less than the amount considered desirable by the Health Organization of the League of Nations (30 mg. daily). The ascorbic acid intake during the spring was little more than half that recommended. Subsequent experiments on other stations have confirmed that the average between these spring and autumn figures is representative of the average figures throughout the year on most R.A.F. stations. It might reasonably be expected, therefore, that if gingivitis were an early sign of ascorbic acid deficiency a noticeable proportion of those with bleeding gums would have shown improvement with ascorbic acid treatment.

In all three experiments the gums of those treated with ascorbic acid showed no greater improvement than those of the control groups, and the incidence of bleeding gums was remarkably constant (about 20%), although the subjects of experiments 2 and 3 had been living on civilian rations in billets until a short time before those experiments. The opinions of patients as to the efficacy of the treatments were found to bear no relation to the objective signs. Those gums which were not "spongy" tended to improve more than those with "sponginess," but the improvement was irrespective of the type of treatment.

Observation of 600 subjects in whom there was a 20.3% incidence of bleeding gums at the first examination showed that there is a large normal variation in the condition of gums, although the total incidence of bleeding gums remains very constant. This may well be the explanation of the apparent success in treatment with ascorbic acid which has been so often reported.

It seems justifiable to conclude that in Royal Air Force personnel in this country ascorbic acid is valueless in the treatment of bleeding gums, and the incidence of bleeding gums is not related to the ascorbic acid intake. This does not exclude the possibility that other subjects living under different dietary conditions might benefit from treatment with ascorbic acid.

Summary

The average amount of ascorbic acid present in the food served to airmen at three R.A.F. stations was 25.8 mg. per man daily during October and November, 1941, and 16.8 mg. during March, 1942.

On examination of 2,962 personnel, 588 (19.8%) were found to have some degree of bleeding of the gums, a similar incidence being found in the autumn and spring and at each of the four stations where the investigations were carried out.

No greater improvement in the gum conditions was obtained by treatment with ascorbic acid than with dummy control tablets.

Observation of 600 personnel over a six-weeks period showed that there was a large normal variation in the degree of bleeding of the gums, irrespective of treatment.

Those having "sponginess" as well as bleeding of the gums showed no greater improvement with ascorbic acid treatment than with dummy tablets, although there was less normal variation in their condition.

Patients' personal opinions as to the efficacy of treatment bore no relation to the objective signs.

We are indebted to Dr. Bradford Hill for the statistical analysis of the results, and wish to thank the officers, airmen, and other personnel at the stations where the experiments were carried out for their co-operation.

REFERENCES

Blockley, C. H., and Baenziger, P. E. (1942). *Brit. dent. J.*, **73**, 57.
Burrill, D. Y. (1942). *J. dent. Res.*, **21**, 353.
Campbell, H. G., and Cook, R. P. (1941). *British Medical Journal*, **1**, 360.
—— —— (1942). *Brit. dent. J.*, **72**, 213.
Crandon, J. H., Lund, C. C., and Dill, D. B. (1940). *New Engl. J. Med.*, **223**, 353
Hakluyt, Richard (1600). *The Principal Navigations.*
Harris, L. J., and Olliver, M. (1942). *Biochem. J.*, **36**, 155.
Kent, B. S. (1943). *Lancet*, **1**, 642.
Lind, J. A. (1753). *A Treatise of the Scurvy*, Edinburgh.
McNee, G. Z. L., and Reid, J. (1942). *Lancet*, **2**, 538.
Roff, F. S., and Glazebrook, A. J. (1939). *J. roy. nav. med. Serv.*, **25**, 340.
Stuhl, F. (1943). *Lancet*, **1**, 640.

Several English cities are likely to benefit from Mr. William Eichholz's £100,000 legacy for the development of the Alfred Eichholz Memorial Clinic in London and of the blind professional masseur generally. The National Institute for the Blind, which administers the clinic, hopes to use some of the money to open similar clinics in provincial centres. When the Institute founded the Eichholz Clinic in 1931 Mr. Eichholz paid all the cost of its establishment and equipment as a memorial to his late cousin, Dr. Alfred Eichholz of the Board of Education. He became an enthusiastic admirer of the ability of its blind staff. All the new clinics in the Provinces will be staffed by blind physiotherapists trained at the Institute's school. This was enlarged last year to meet the training needs of war casualties in the Forces and among civilians.

INCIDENCE OF GINGIVITIS IN THE ROYAL AIR FORCE

BY

G. A. SMART, M.D., B.Sc., M.R.C.P.
Squadron Leader, R.A.F.V.R.

(R.A.F. Institute of Pathology and Tropical Medicine)

In the course of an inquiry into gingivitis in the Royal Air Force, initiated by Air Marshal Sir H. E. Whittingham, Director-General of Medical Services, the incidence of this condition was determined at four Royal Air Force stations.

Classification

Since the various forms of gingivitis are not clearly defined, it was decided to adopt a classification which would avoid ambiguity and which was based on naked-eye appearances. The gums of those examined were assigned to one or other of the following categories.

A. *Normal.*

B. *Gingivitis without Ulceration.*—In this group the gums and the interdental papillae are swollen, bluish red in colour, frequently bleed on pressure, and, adjacent to the teeth, may have a smooth shiny appearance with absence of the normal stippling. Such gums are often sensitive when touched with a probe. The lesion most frequently occurs in the region of the lower incisors. When viewed through the corneal microscope the normal cornified layer may be seen to stop short about 2 to 3 mm. from the crest of the gum. Between this point and the crest the gum is swollen and oedematous, and the capillaries lie in long loops, like hairpins, whereas in the normal gum, and in the region where the cornified layer is still present, they are convoluted. Purely local patches of hyperaemia due to obvious trauma or to toothbrush abrasions were not regarded as this type of gingivitis.

C. *Healed Gingivitis.*—The interdental papillae are missing and the gums are pale, but thickened and rolled in appearance. There is no evidence of existing inflammation; it is clearly a healed condition. Those who have suffered previously from gingivitis and have undergone treatment often have gums of this type.

D. *Chronic Ulcerative Gingivitis.*—Cases in this group usually resemble Type B gingivitis with a superadded chronic ulceration, frequently at the tip of one or more interdental papillae. The ulceration may occur more deeply, between the gums and the necks of the teeth; the appearance is then of an early periodontitis.

E. *Acute Ulcero-membranous Gingivitis and Gingivostomatitis.*—This can be subdivided into two groups: (i) arising on apparently healthy guns; (ii) arising on gums which show evidence of pre-existing inflammation. Types E i and E ii constitute the entity known as trench mouth, and often the presenting symptom is pain. This can be of two varieties: (*a*) pain of an aching character, localized to the region of the affected gum—throbbing may occur if the lesion is acute; (*b*) dull aching pain, like toothache, situated deeply and not well localized. Foetor oris is always present, and, contrary to some teaching, may be noted by the patient. Bleeding of the gums usually occurs with mild trauma, as from tooth brushing, but it can arise spontaneously, and may be the presenting symptom. The lymph glands which drain the affected area may be swollen and painful. The lips are often crusted, the lower lip and the angles of the mouth being most frequently affected. The tongue may be swollen and show marginal indentations from pressure of the teeth. The gums are swollen, hyperaemic, and turgid in appearance; the normal line of demarcation between the pale mucous membrane of the gum and the redder mucous membrane of the gingivo-labial fold is absent.

Two types of ulceration may be present, concurrently or separately. In the more acute form a narrow serpiginous band of ulceration, with apparent membrane formation, extends round the necks of the teeth; it is confined to the region of the alveolar crest. This process may stop abruptly if a gap due to previous dental extractions exists between the teeth. Rarely, ulceration occurs on that part of the buccal mucous membrane in contact with the affected gum. Ulceration may also occasionally extend on to the mucous membrane of the fauces and soft palate. The other type of ulceration does not seem to be so acute, and it is confined to the tips of some of the interdental papillae. Both types of ulceration occur about the incisor teeth, but the lesions may be generalized or they may be confined to other regions of the mouth.

The chief general disturbances are lassitude and mental depression, but these may be entirely absent. The temperature is usually normal, but it may be slightly raised. There is no characteristic blood picture, but occasionally a slight polymorphonuclear leucocytosis may occur.

Method of Investigation

At each of the stations concerned a random sample of the personnel was taken from the nominal roll. These were ordered to attend for examination. If, owing to leave, sickness, or other cause, any of those selected could not be present, the reason was stated by the section concerned. At the first station to be examined the random sampling was carried out by Dr. Bradford Hill. Each subject, when examined, was required to give details of age, sex, Royal Air Force or Women's Auxiliary Air Force trade, civilian occupation before joining the Service, and date of joining. The gums were then classified into one or other of the above groups.

Results

Tables I to IV show the incidence of the various types of gingivitis at the four R.A.F. stations.

TABLE I.—*Incidence of Gum Lesions among Personnel at Fighter Station I*

	R.A.F.					W.A.A.F.					Sum Total
Age:	−25	26–30	31–35	36+	Total	−25	26–30	31–35	36+	Total	
Gums:											
Normal ..	42	19	4	9	74	41	2	0	0	43	117
Type B ..	14	9	8	11	42	12	1	1	0	14	56
Type C ..	1	0	2	2	5	1	1	0	0	2	7
Type D ..	1	0	2	16	19	2	1	0	0	3	22
Edentulous	0	2	4	10	16	0	1	0	0	1	17
Total ..	58	30	20	48	156	56	6	1	0	63	219
% Normal	72·4	63·3	20·0	18·7	—	73·2	—	—	—	—	—

TABLE II.—*Incidence of Gum Lesions among Personnel at Fighter Station II*

	R.A.F.					W.A.A.F.					Sum Total
Age:	−25	26–30	31–35	36+	Total	−25	26–30	31–35	36+	Total	
Gums:											
Normal ..	41	17	17	11	86	45	5	0	0	50	136
Type B ..	20	11	14	13	58	17	4	1	0	22	80
Type C ..	0	2	1	7	10	0	0	0	0	0	10
Type D ..	1	1	2	2	6	3	0	0	0	3	9
Type E ii	0	1	0	0	1	0	0	0	0	0	1
Edentulous	0	1	5	10	16	0	0	0	1	1	17
Total ..	62	33	39	43	177	65	9	1	1	76	253
% Normal	66·1	51·5	43·6	25·6	—	69·3	—	—	—	—	—

TABLE III.—*Incidence of Gum Lesions among Personnel at R.A.F. Bomber Station III*

	R.A.F.					W.A.A.F.					Sum Total
Age:	−25	26–30	31–35	36+	Total	−25	26–30	31–35	36+	Total	
Gums:											
Normal ..	90	50	36	20	196	33	2	0	0	35	231
Type B ..	39	18	25	17	99	13	1	1	0	15	114
Type C ..	2	2	7	3	14	0	0	0	0	0	14
Type D ..	5	4	8	6	23	3	0	0	0	3	26
Type E ii	1	0	1	0	2	0	0	0	0	0	2
Edentulous	2	8	14	14	38	0	1	0	0	1	39
Total ..	139	82	91	60	372	49	4	1	0	54	426
% Normal	64·8	61·0	39·6	33·3	—	67·4	—	—	—	—	—

TABLE IV.—*Incidence of Gum Lesions among Personnel at R.A.F. Bomber Station IV*

	R.A.F.					W.A.A.F.					Sum Total
Age:	−25	26–30	31–35	36+	Total	−25	26–30	31–35	36+	Total	
Gums:											
Normal ..	74	26	21	10	131	30	2	6	2	40	171
Type B ..	24	13	20	8	65	20	6	0	0	26	91
Type C ..	2	0	3	3	8	1	0	0	0	1	9
Type D ..	2	0	3	3	8	3	0	0	0	3	11
Edentulous	0	5	2	16	23	1	0	0	0	1	24
Total ..	102	44	49	40	235	55	8	6	2	71	306
% Normal	72·5	59·1	42·8	25·0	—	54·5	—	—	—	—	—

These results have been summarized in Table V. From the figures given therein edentulous subjects have been excluded since they are not normally susceptible to gingivitis.

TABLE V.—*Incidence of Gingivitis in Personnel with Teeth at Stations I, II, III, and IV*

Age:	−25		26–30		31–35		36+	
Gums:	Norm.	Ging.	Norm.	Ging.	Norm.	Ging.	Norm.	Ging.
Station:								
I ..	83	31	21	12	4	13	9	29
II ..	86	41	22	19	17	18	11	22
III ..	123	63	52	25	36	42	20	26
IV ..	104	52	28	19	27	26	12	14
Total..	396	187	123	75	84	99	52	91
% ..	67·9	32·1	62·1	37·9	45·9	54·1	36·3	63·7

Table VI shows the proportions of the various types of gingivitis at the four stations where the survey was carried out. About 75% of all subjects with gingivitis have a Type B lesion. A chronic ulcerative gingivitis is present in about 15%, but the proportion varies greatly at different stations. That at Fighter Station I is significantly higher than the proportion at Fighter Station II or at Bomber Station IV. This is chiefly due to variations in the numbers of older personnel examined at each of the stations. Only 3 subjects suffering from acute ulcero-membranous gingivitis were found.

In subsequent analyses all types of gingivitis have been grouped, since the numbers of all but Type B are too small to be subdivided, and since most authorities agree that in a large proportion of cases chronic ulcerative gingivitis (Type D) is an extension of Type B.

TABLE VI.—*Proportions of Various Types of Gingivitis at Four R.A.F. Stations*

Station	Type of Gingivitis					Total
	B	C	D	E i	E ii	
Fighter I ..	56 (65·8)	7 (8·2)	22 (26·0)	0	0	85 (100)
" II ..	80 (80·0)	10 (10·0)	9 (9·0)	0	1 (1·0)	100 (100)
Bomber III ..	114 (73·2)	14 (9·0)	26 (16·7)	0	2 (0·1)	156 (400)
" IV ..	91 (82·0)	9 (8·1)	11 (9·9)	0	0	111 (100)
Total ..	341 (75·4)	40 (8·9)	68 (15·0)	0	3 (0·7)	452 (100)

Figures in parentheses represent percentages.

The social status of 540 airmen taken at random from those examined was arrived at from their pre-Service civilian occupation (Medical Research Council, 1944), and the percentage of those with normal gums (edentulous subjects excluded) in each social grade was determined. Table VII shows these results.

TABLE VII.—*Gingivitis and Pre-Service Social Status*

Gums	Social Class					Total
	1	2	3	4	5	
Normal ..	7	62	200	35	11	315
Gingivitis ..	2	33	136	43	11	225
Total ..	9	95	336	78	22	540
% Normal	77·7	65·3	59·5	44·9	50·0	—

The incidence of gingivitis of all types (edentulous subjects excluded) in the different R.A.F. trades is shown in Table VIII. The figures therein have been corrected for age differences in the following manner. The age distribution of the whole of the population was first determined, and this was taken as a standard (Table IX). The incidence of gingivitis among those susceptible in each age group of each trade was then found, and was applied to the respective age group of the standard population. The results in each trade were added, the figures shown in Table VIII being obtained. This correction was necessary because of the vastly different age distribution in different trades and because of the relation of the incidence of gingivitis to age, which can be seen in Table V.

TABLE VIII.—*Gingivitis in R.A.F. Trades, corrected for Age Differences. (Edentulous Personnel excluded)*

Trade	% Gingivitis
Air-crew	22
Cooks, butchers, batmen, waitresses	60
Group I trades	34
" II "	45
" IV "	40
" V "	44

Cooks and butchers, batmen, and waitresses have been excluded from their respective trade groups. Too few personnel in Group III and "M" were examined for an adequate comparison to be made. In general, Group I contains the more skilful and more highly paid workers.

TABLE IX.—*The Age Distribution of the Standard Population. (This was obtained from the Average Age Distribution of all Four Stations)*

Age Group	No. of Persons
−25	52·7
26–30	17·0
31–35	17·4
36+	12·9
	100·0

Table X shows the incidence of gingivitis among susceptible subjects grouped according to length of service. These figures have been corrected for differences in age distribution in the same way as those obtained for the various R.A.F. and W.A.A.F. trades.

TABLE X.—*Incidence of Gingivitis, corrected for Age, according to Length of Service in the R.A.F. (Edentulous Personnel excluded)*

Length of Service (mths.)	No. Examined	% Gingivitis
0–11	122	41·14
12–23	160	35·82
24–35	275	40·22
36+	152	36·11

Discussion

Sex Incidence.—Tables I, II, III, and IV show that only at Bomber Station IV was the incidence of gingivitis among airwomen different from that among airmen of the same age group. At this station the difference is statistically significant ($P=0.03$), the airwomen being worse. Furthermore, the incidence among airwomen at this station is just significantly higher than that among those at the other three stations ($P=0.05$). The reason for these differences is not known, but it would seem that there is usually no difference in the incidence of gingivitis among the two sexes.

Age Incidence.—Table V shows clearly that the incidence of gingivitis is greater in the older age groups. It is necessary, therefore, to apply a correction for age distribution when the incidences of gingivitis in two different groups are to be compared. The method of carrying out this correction has already been described; it has been applied to the different stations examined, and the corrected incidence of gingivitis so found is shown in Table XI.

TABLE XI.—*Incidence of Gingivitis in the Susceptible Population of Each of Four R.A.F. Stations, Corrected for Age to the Standard Population*

Station	% Gingivitis
I	43·6
II	42·4
III	40·0
IV	39·9

Incidence compared with Other Groups.—It is difficult to compare the incidence of gingivitis found in the R.A.F. with that found by other investigators among other groups of subjects, since the standards of diagnosis are so variable. During the last war Semple, Price-Jones, and Digby (1919) found that 29.5% of one unit had gingivitis. Whittingham (1932), during an extensive investigation into the aetiology of tonsillitis, examined the gums of nearly 3,000 R.A.F. and Army apprentices between the ages of 16 and 19. Table XII shows the results he obtained.

TABLE XII

	No. Examined	% Gingivitis
R.A.F.	2,085	16·9
Army	655	34·4

Considering the difference in age, it is seen that the incidence found in R.A.F. apprentices is similar to that found in the present investigation for air-crew, while the incidence for Army apprentices is similar to that for other R.A.F. trades. The boys who became aircraft apprentices in 1930 were of much the same social class as those now volunteering for air-crew duties, whereas people who became Army apprentices were similar to those who now enter the other R.A.F. trades. More recently Roff and Glazebrook (1940) found the incidence in naval trainees to be 17.6%. This figure again is close to that obtained in the R.A.F. apprentices, and it is probable that both groups were recruited from similar sections of the population.

MacDonald (1943) examined 614 naval personnel and found the incidence of gingivitis to be 28.5%. In this figure, however, no correction has been made for age (although the author shows

that there is an increase in the incidence of gingivitis with increase in age), and edentulous subjects—who, as he points out, are not susceptible—are included in the total. Exclusion of the latter brings the incidence to 30.5%, but this figure is uncorrected for age. For those under 30 years the incidence was 17.7%. In the present investigation the incidence of gingivitis among airmen and airwomen under 30 years (including edentulous subjects for the sake of comparison) was found to be 32.7%. The age-corrected incidence of gingivitis among those susceptible in the R.A.F. is approximately 40%.

Influence of Social Status.—The figures in Table VII show that there is a correlation between the incidence of gingivitis and pre-Service social status, the condition being less prevalent in the higher-income groups. It is beyond the scope of this paper to discuss the reason for this, but both dietetic factors and differences in personal hygiene may be involved.

Incidence in Various R.A.F. Trades.—The incidence of gingivitis among air-crews is significantly less than that among the rest of the R.A.F., due correction having been made for age differences; but it should be noted that only specially selected air-crew personnel were posted to the stations which were examined. On the other hand, the incidence among those engaged in messing and in the preparation of food is significantly higher than among the remainder, excluding air-crew. If the condition is infectious this finding is obviously important.

Whether the differences in the incidence of gingivitis among personnel engaged in the different R.A.F. trades are due to specific working conditions it is difficult to say; but the fact that different trades recruit their members in different proportions from the various social classes must certainly play a large part in producing the variations which have been found. This supposition is supported by the fact that there seems to be no relation between the incidence of gingivitis and length of service in the Royal Air Force.

Summary

A survey of the gums of random samples of airmen and airwomen from each of four Royal Air Force stations has been carried out.

The incidence of gingivitis was approximately 40%. It was higher among those susceptible in the older age groups and in those recruited from the poorer social classes. Length of service in the R.A.F. did not seem to influence the incidence of gingivitis. Significant differences were found among the various trade groups, the incidence being lower among those who were more highly paid.

The reasons for these differences have been discussed.

Thanks are here recorded to Air Marshal Sir H. E. Whittingham, who initiated the investigation and who allowed the extensive facilities necessary for carrying it out; to Air Commodore T. McClurkin, Director of Hygiene, for his help and encouragement; to Dr. Bradford Hill, for advice concerning the sampling and for his assistance in the analysis of the results; and to Dr. B. S. Platt for much information, help, and encouragement. Thanks are also recorded to the commanding officers, medical officers, and dental officers who were concerned in the organization of the experiments.

REFERENCES

MacDonald, A. C. (1943). *Lancet*, **2**, 697.
Medical Research Council (1944). Spec. Rep. Ser. No. 248.
Roff, F. S., and Glazebrook, A. J. (1940). *Brit. dent. J.*, **68**, 135.
Semple, D., Price-Jones, C., and Digby, L. (1919). *J. R.A.M.C.*, **33**, 217.
Whittingham, H. E. (1932). Unpublished data, contained in a report to Air Ministry.

RUPTURE OF AORTIC ANEURYSM INTO THE DUODENUM

BY

J. EDGAR MORISON, M.D., B.Sc.

Lecturer in Morbid Anatomy, Queen's University; Pathologist, Belfast City Hospital

One of the rarest causes of fatal intestinal haemorrhage is rupture of an aortic aneurysm into the gut. Howland and Sprofkin (1943) reported a case and found 4 similar cases recorded since 1936, when Kampmeier (1936) discovered 9 cases in the literature and contributed another. These 15 cases are included in their summary of 520 cases of abdominal aneurysm recorded up to Dec., 1942. Four aneurysms of the abdominal aorta—two rupturing into the retroperitoneal tissues, one into the duodenum, and a small asymptomatic one—have been seen. The present case of haemorrhage into the duodenum is worthy of record, and the diagnosis was suggested before necropsy.

Clinical History

The patient, a housewife aged 64, complained of aching pain referred to both sides of the abdomen and of frequency and scalding on micturition. These symptoms, of two to three months' duration, were not incapacitating. On examination a mass the size of a cricket ball was felt to the left of the umbilicus. This was slightly fluctuant and somewhat tender, and pulsated with the heart-beat. Special examinations failed to contribute further to the diagnosis, especially as between a pancreatic cyst and an abdominal aneurysm. The urine contained *B. coli*, the blood Wassermann reaction was negative, and a fractional test meal revealed complete achlorhydria. A radiograph of the abdomen disclosed no abnormality, and with a barium meal there was no deformity of the stomach and the meal passed normally through the intestine. A urinary diastase index of 10 was normal. After rest and treatment for cystitis for three weeks the patient went home. Ten weeks later she had a very severe haematemesis and was readmitted in extreme collapse. After transfusion of three pints of blood her blood pressure rose from 60 to 85 mm. Hg systolic, but she continued to vomit blood and died in seven hours.

Pathology

Bright red blood, often in large clots, filled the greater part of the stomach and small intestine and reached to the hepatic flexure. Where its horizontal part passed into the ascending part the third part of the duodenum was lifted forwards by a globular mass adherent to its posterior aspect and to the left side of the aorta. Even after fixation this measured 6.5 by 6.5 by 4 cm. At the same level there was a vertical tear with dark red and slightly everted edges in the mucosa of the posterior duodenal wall measuring 1.5 by 0.5 cm. and communicating with the aorta through the cavity of the globular mass. This was filled with blood-clot, some of which was old and laminated, though little of it was organized. The walls were in few places more than 0.5 cm. in thickness, but there was considerable fibrosis in the surrounding retroperitoneal tissue. The entrance to this sac from the aorta was round and 1.5 cm. in diameter, while the wall of the aorta up to the very margins of the defect appeared free from stretching or scarring. The orifice of the inferior mesenteric artery was carried into the lower margin of the entrance of the sac, but its lumen contained no thrombus. The renal arteries lay above the sac and were not involved. From about an inch above the aneurysmal sac to its iliac bifurcation the intima of the aorta showed confluent hyaline plaques containing very little calcium and no grumous material. There was no intimal scarring in the region of the arch, nor adventitial thickening.

Numerous sections of the aorta showed only a little adventitial thickening and a very occasional infiltration by mononuclear cells around the vasa vasorum. The elastica of the media, even at the edge of the aneurysm, was not demonstrably altered by the fibrosed atheromatous plaques. Near the margin of the aneurysmal defect the adventitial fibrous tissue increased, and distinctive infiltrations of mononuclear cells, including plasma cells, occurred around thickened vasa vasorum and extended inwards into the media. In the disorganized wall opening into the aneurysmal sac itself the changes were less specific, plasma cells were numerous, but proliferating fibrous-tissue elements and large mononuclear cells, some containing haemosiderin, were also present, and elastic elements had almost entirely disappeared.

Complete routine histology from all organs revealed nothing of further interest apart from portal cirrhosis which was not actively progressive, the absence of the lesions of Banti's disease from the spleen, and the non-specific nature of bilateral apical lung scars.

Probably almost all these aneurysms are due to syphilis. Specific changes may be limited to small areas of the aorta, and only after very detailed study can atheroma, acute bacterial aortitis without focus elsewhere (Rappaport, 1926), or aortitis of undetermined origin (Sproul and Hawthorne, 1937) be considered. Atheroma was not unusual or excessive in the present case. The plaques were largely fibrosed, and, while the changes in the wall at the actual site of the aneurysm cannot now be known, it is reasonable to believe that the mural defect was secondary to changes in the vasa vasorum similar to those noted in the thickened adventitia and in the media at the margin of the aneurysm. Syphilitic aortitis is often the cause of an aneurysm; atheroma is much more common, and yet it is difficult to obtain evidence that it is ever responsible.

In 900 necropsies on patients over 30 years of age with complete histology of all organs, 15 thoracic and 4 abdominal aneurysms were found to be due to syphilis and only 3 were dissecting aneurysms secondary to medial necrosis. In the same material a further 29 cases showed changes which justified

a diagnosis of syphilitic aortitis. These changes were infiltrations by a few plasma cells around the vasa vasorum and often a little adventitial fibrosis. This gives an incidence in our material of 2.1% for syphilitic aortic aneurysm and 5.3% for syphilitic aortitis. These figures would be approximately halved if all necropsies at all ages and those limited to the cranium were included. An incidence of 1.7% and 2.7% is given by Bryant (1903) and by Osler (1905) respectively for aortic aneurysm, but reviews of the subject ignore the age composition of the necropsy material. The negative Wassermann in the present case need occasion no surprise, for in just over half the recorded cases the reaction was negative.

Summary

In 900 complete necropsies on patients over the age of 30, 15 thoracic and 4 abdominal syphilitic aneurysms and 29 cases of syphilitic aortitis were found. A case of rupture of an abdominal aneurysm into the duodenum is reported.

I wish to thank Dr. F. M. B. Allen for clinical notes on this case.

REFERENCES

Bryant, J. H. (1903). *Clin. J.*, **23**, 71.
Howland, E. S., and Sprofkin, B. E. (1943). *Amer. J. med. Sci.*, **206**, 363.
Kampmeier, R. H. (1936). Ibid., **192**, 97.
Osler, W. (1905). *Lancet*, **2**, 1089.
Rappaport, B. Z. (1926). *Arch. Path.*, **2**, 653.
Sproul, E. E., and Hawthorne, J. J. (1937). *Amer. J. Path.*, **13**, 311.

Medical Memoranda

Rupture of Rectus Abdominis as a Complication of Pregnancy

A paper by Mr. Rufus Thomas in the *Journal* of July 31, 1943 (p. 136), and a letter from Dr. Nora Keevil published on Aug. 21, 1943 (p. 245), drew my attention to the rarity of rupture of the rectus abdominis as a complication of pregnancy. I therefore thought that it might be worth while publishing the record of a case which I treated before joining the Forces.

Mrs. A., aged 37, was admitted to hospital at 9.25 p.m. on May 14, 1941. She was a 6-para, whose five previous pregnancies had ended in two premature labours (both infants alive and well) and three abortions. Present pregnancy: L.M.P. Oct. 10, 1940 (31 weeks' duration at time of admission). She had been well, apart from some chronic bronchitis, until four hours before admission, when she was seized with a sudden pain in the upper right quadrant of the abdomen. The pain remained constant. She vomited once. There was no vaginal haemorrhage or discharge. Her doctor had sent her to hospital with a diagnosis of ? ovarian, ? fibroid, ? appendix.

When examined in hospital the uterus was found to correspond to a period of amenorrhoea. There was a hard tender mass to the right of, and separate from, the uterus. It was deep to the rectus muscle, and was all above the umbilicus. T. 99°; P. 104; R. 28. Laparotomy was decided upon. Diagnosis: acute abdomen. Nature of tumour not diagnosed.

Under general anaesthesia a right paramedian incision revealed a large haematoma in the sheath of the right rectus muscle and deep to the muscle. The muscle fibres were torn opposite the tip of the ninth costal cartilage and the terminal branches of the deep epigastric were torn across. The clot was evacuated and the bleeding vessels secured. The peritoneum was opened and found normal; it was then closed. A corrugated rubber drain was put into the rectus sheath and the wound closed. Apart from some vaginal bleeding the day after operation, convalescence was uneventful. She was discharged on June 13—30 days after operation. She reported to the antenatal department on June 24, and was found to have bronchitis and albuminuria. She was readmitted to hospital, and remained there till full term. She had a normal delivery of a female infant weighing 6 lb. 10 oz. on July 21. She was finally discharged on Aug. 1. Mother and infant were both well.

S. WILBERFORCE LIGGETT, M.B., F.R.C.S.Ed., M.R.C.O.G.

Medical and surgical self-adhesive plasters now contain a proportion of synthetic rubber. Their life continues to be adequate for all reasonable requirements, but they cannot be guaranteed to withstand storage over long periods. The Medical and Surgical Plaster Makers' Conference advises dealers to rotate their stocks regularly to eliminate the possibility of goods lying on shelves. Stock which has not been turned over may deteriorate and cannot be replaced or credited by the manufacturers.

Reviews

NUTRITIONAL DEFICIENCIES

Nutritional Deficiencies: Diagnosis and Treatment. By John B. Youmans, M.D., assisted by E. White Patton, M.D. Second edition. (Pp. 389; illustrated. 30s.) London: J. B. Lippincott Company.

This book was written essentially for clinicians, and during the 18 months between the appearance of the first edition and the preparation of the second, little work applicable clinically has appeared. The additions to the book include the changes in the eye in vitamin A deficiency and the use of blood vitamin A determinations. The chief parts rewritten are those concerning the diagnosis of thiamine, nicotinic acid, vitamin C, and other possible nutritional deficiencies. The table of the recommended allowances of calories, protein, calcium, iron, vitamins A, B_1, C, D, riboflavin, and nicotinic acid of the Food and Nutrition Board of the National Research Council has been added. Though it was recognized that these were probably generous, it was also recognized that in clinical medicine a liberal factor of safety is desirable. A most valuable summary of the vitamins and the laboratory diagnosis of deficiency diseases is given at the end of the book. Section 1 gives a tabular summary of the vitamins A, B_1, nicotinic acid, riboflavin, C, D and calcium, E and K, their nature, function, dietary source, pathology, clinical expression, diagnosis, treatment, and common units of measure. Section 2 gives the principal dietary sources of the essential food factors (including the vitamins, calcium, iron, iodine, and protein). Section 3 deals fully and practically with the diagnosis of deficiency diseases by laboratory methods. The book is well printed and strongly bound.

SPANISH MEDICAL MONOGRAPHS

Diagnóstico y Tratamiento de la Epilepsia Genuina. By J. J. López Ibor. Colección Española de Monografías Médicas. Barcelona. 1943.

Enfermedades no Ulcerosas del Duodeno. By F. Gallart Monés and E. Vidal Colomer. Colección Española de Monografías Médicas. Barcelona. 1944.

These two publications are Nos. 31 and 32–3 in a series of monographs on special medical subjects under the general editorship of Dr. J. Puig Sureda. The first, by Prof. López Ibor of the Cajal Institute, is a short survey of present knowledge of true epilepsy and its various manifestations. The author refers with a certain reserve to the diagnostic value of electroencephalography. Methods of treatment are briefly summarized in the last chapter. Although the author has evidently read widely in his subject and cites many other writers, no references to sources are given, and this detracts from the value of an otherwise useful and concise work. The second monograph, on non-ulcerative diseases of the duodenum, opens with discussions of anatomical and physiological considerations, radiological technique, and the normal duodenum. The following conditions are then considered: duodenitis, duodenal stenosis, chronic duodenal stasis without stenosis, periduodenitis, duodenal diverticulosis. There follow chapters on pathological anatomy, atypical placement, deformities of extrinsic origin, tumours, syphilis, and tuberculosis.

A novel feature of this series of monographs is that each one contains an appendix of signed "Practical Notes on Diagnosis and Treatment." The reviewer surmises that the main object of these is to lead the eye of the reader to the interleaved advertisements, which do not appear in the monograph itself.

ASPECTS OF INDUSTRIAL MEDICINE

Industrial Medicine. The Practitioner Handbooks series. (Pp. 202. 16s.) London: Eyre and Spottiswoode. 1944.

General practitioners should visit factories so as to be able to understand more clearly the working conditions of their patients, and it is for such that this book has been published. But the title is misleading: it is not a comprehensive survey of the field of industrial medicine but rather a series of essays skirmishing lightly with certain aspects of the problem, for which the price is rather on the high side. In an introduction Sir David Munro rightly stresses the need for collaboration between practitioners and factory doctors; and the succeeding chapters, each written by a separate author, give the practitioner some insight into the work of the industrial medical officer.

H. M. Vernon briefly describes industrial poisons, but, as he points out, few of these will be found in any one factory. The difficult question of skin disease is skilfully approached by Alice Peters, but "contact" is a word neither used nor readily understood by those without experience of Royal Ordnance factories. In a helpful chapter chest diseases are discussed by A. J. Amor. Ethel Browning writes about toxic anaemia, which was recognized as a notifiable occupational disease only in 1942. But it is a sign of editorial lack of knowledge of industry that a separate chapter is given up to a technical discussion on back strain; on the other hand, the short contribution by D. C. Norris on malingering constitutes one of the best chapters in the book. T. Bedford writes on ventilation and heating in a simple yet fully informative style, and lighting problems are discussed by E. W. Murray. One major criticism is the lack of illustrations, to which a book such as this specially lends itself: for example, this takes away much of the value of P. Pringle's contribution on the works ambulance room. The final chapter—one perhaps that might have been put first in the series—is by A. I. G. McLaughlin on factory law in relation to health and welfare. As he points out, the principles of industrial medicine need legal backing to ensure that comparable preventive measures are practised in all factories throughout the country.

PHARMACOLOGY IN BRIEF

An Introduction to Pharmacology and Therapeutics. By J. A. Gunn, M.D. Seventh edition. (7s. 6d.) London: Oxford University Press.

Writers of short textbooks which while being short are accurate perform a most important service to medical education. There can be no doubt that Prof. Gunn, by this small book, has done a great deal to enable the harassed medical student to achieve some grasp of a subject the importance of which is growing. In many medical schools there is still no department of pharmacology; the student attends a few lectures by someone primarily occupied in clinical work, and for his examination is usually recommended to struggle with a large textbook. The result is that the student learns little of a fascinating subject which forms an excellent approach to the investigation of clinical problems. The first need is a simple book. Prof. Gunn has supplied this in an admirable form, for it is clearly written, in an interesting style, and surprising in the amount of matter it actually contains. Those who complain that it is incomplete should make sure of their ground by examining the book to see what information is missing. They will be surprised to find how little. If those treating patients were thoroughly familiar with this book alone it is certain that they would be on sure ground in the knowledge of how to use drugs.

Notes on Books

Parts IV, V, and VI complete the third edition of *Surgery of Modern Warfare*, edited by Mr. HAMILTON BAILEY (E. and S. Livingstone; 15s. each volume). They cover wounds of the central and peripheral nervous system, the trunk, the hand and foot, the eye and orbit, and the ear and air passages, and deal with surgery in subtropical countries and with administration and transport of the wounded. Part VI concludes with an appendix in which are reviewed recent important papers on war surgery which have appeared while the earlier parts of this edition were in the press. As in the earlier parts these later ones show evidence of much revision and include a number of new illustrations. The last illustration in the book, Fig. 1128, page 1077, is a photograph of Richard Lewisohn, now consulting surgeon to Mount Sinai Hospital, New York, to whom a well-deserved editorial tribute is paid, for to him we owe the citrate method of blood transfusion, which he announced in 1915 and which is now so universal. The modifications in the various editions of this work provide a key to the evolution of surgical practice in modern warfare, and to that extent it is a history of surgery between 1939 and 1944. The third edition is the best that has yet appeared.

In *They Gave me a Crown* (Herbert Jenkins; 15s.) Dr. I. G. BRIGGS has written his reminiscences of life as a ship surgeon, as an Army medical officer, and as a doctor to a "world-famous industrial organization." The author's criticisms of the R.A.M.C. are too pungent and ill informed to make pleasant or useful reading. The greater part of the book is taken up with case histories of men mostly suffering from mental strain or malingering. The interest of these from a medical point of view is diminished by the absence of end-results: all trace is lost of the many men who "work their ticket" out of the Army, usually after having given endless trouble to the authorities. The author designates mental examiners of such cases as "psycho-blokes." His book is more for the lay public than for the medical profession. We can imagine the former will find it amusing and entertaining so long as they do not take what he calls "sheer stupidity in the Army" too seriously.

It Came to Pass, by SIDNEY FAIRWAY (Stanley Paul and Co.; 9s. 6d.), is a medical novel that tells the story of a village boy whose ambition from his earliest years was to be a doctor. The time is the first half of the nineteenth century when modern scientific medicine was born. After service with an apothecary, the hero of the tale, Rufus Belden, becomes apprenticed to a doctor and later enters Guy's Hospital as a student. His subsequent professional career was dramatic and colourful enough to make an exciting story with a love thread running through it. The book includes a good account of the medical muddle in the Crimean War. The tale is well told and has been compiled from authentic sources such as *The Life of Florence Nightingale* and *The Biographical History of Guy's Hospital*. It is worth reading, and it emphasizes the striking progress that has been made in the care of the sick and wounded during the past hundred years.

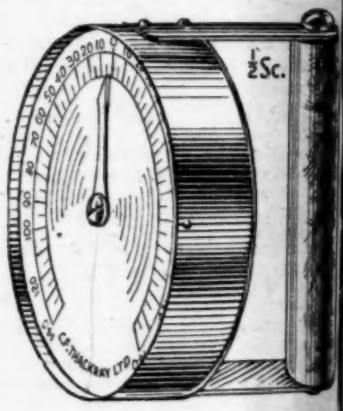
The Cancer and General Research Committee of the Middlesex Hospital has sent us a folder containing collected papers by members of the staff published in various journals during the years 1942–3 and 1943–4. These reprints are prefaced with four classified tables of contents. The collection may be seen in the B.M.A. Library at Tavistock Square.

The book *Pathology and Therapy of Rheumatic Fever* by Leopold Lichtwitz, which was noticed in the *Journal* of July 29, will be issued in this country by William Heinemann (Medical Books), Ltd., early in September at 21s.

Preparations and Appliances

A GONIOMETER FOR MEASUREMENT OF SUPINATION AND PRONATION

Mr. JAMES PATRICK, F.R.C.S., orthopaedic surgeon, Glasgow Royal Infirmary, writes:



The instrument shown in the illustration has been devised for the measurement of supination and pronation movement of the forearm, as there does not appear to be any goniometer suitable for this purpose on the market. The pointer of the instrument is fastened on a spindle running through the axis of the drum, and inside the drum a weighted lever is fixed on the spindle in a position diametrically opposite to the pointer. As the drum and the scale rotate, therefore, the pointer remains vertical.

To use the instrument, the patient grasps the handle and stands against the wall with the elbows flexed to a right angle and well tucked in to his sides. Zero position is taken where the handle of the instrument is in line with the humerus. The surgeon gently holds the patient's wrists in order to guide the arm movements. The range of supination is read off on the affected side, and the instrument is then transferred to the normal hand and the supination range again measured. The limitation of supination is noted as minus x degrees. The same two measurements are then made for pronation and the limitation written down as minus y degrees.

This method of recording the measurement is a reliable one because supination and pronation movement is identical in range in either forearm in any normal individual. Simple direct measurement of the supination and pronation range on the affected side alone will not reveal when full movement has returned, and is useless for comparison of end-results between different patients because the rotation movement may vary enormously from one person to another.

By rotating both forearms simultaneously the patient is less likely to lean over to one side and so falsify the measurement, but in any case it is important to see that he remains standing erect. In performing pronation the patient has a tendency to bring the elbow away from the side, and this source of error must also be guarded against.

The manufacture of the instrument is in the hands of Chas. F. Thackray, Ltd., Park Street, Leeds.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY AUGUST 19 1944

SCOTLAND'S HEALTH

That a satisfactory level of national health was maintained in Scotland during the fourth year of war is shown by the Summary Report by the Department of Health for Scotland for the year ended June 30, 1944. Progress in maternity and child welfare was reflected in the rates for stillbirths (36 per 1,000 total births), maternal mortality (3.7 per 1,000 total births), and infant mortality (65 per 1,000 live births). These rates were the lowest ever recorded in Scotland, but there is much leeway to be made up yet; infant mortality is still high. Slightly over half of the infantile deaths in 1943 were due to diseases peculiar to early infancy—congenital debility, premature birth, malformation, etc. Of the remaining deaths one-third were attributed to pneumonia and one-fifth to diarrhoea. Maternity accommodation was extended during the year. At the end of June, 1944, 2,178 beds were available in maternity institutions—an increase of 333 on the preceding year, and 718 more than in 1938. A high neonatal death rate due to infections was experienced in both home and hospital—a problem now being thoroughly probed.

The deaths from the principal infectious diseases were 889 more in 1943 than in 1942—a rise due to an increase of 213 in the deaths attributed to whooping-cough and of 845 in deaths from influenza. The deaths from the other causes under this heading declined, and the totals for diphtheria, 59, and scarlet fever, 22, were the lowest ever recorded in Scotland. The incidence of dysentery of a minor type continued to increase; the notifications for 1939-43 were 1,132, 1,888, 2,429, 2,515, 3,425. Scarlet fever has also been more prevalent; the notifications rose from 13,792 in 1942 to 15,108 in 1943. Diphtheria notifications for the four years 1940–3 were 15,069, 12,395, 9,474, 9,255—a notable fall. The drive for immunization against diphtheria has slackened: fewer than 46,000 children were inoculated in 1943, and of these the 30,000 under 5 years of age comprise only one-third of the number of children who each year reach their first birthday. Propaganda should be intensified. The attack rate from diphtheria was four and a half times greater among the non-immunized than among the immunized, and the case fatality was nine times higher in non-immunized than in the immunized group of children: that is, the chance of dying from diphtheria was about 40 times greater among the non-immunized than among those protected by diphtheria prophylactic.

Tuberculosis mortality fell slightly: 3,959 deaths during 1943, compared with 3,998 in 1942 and 4,174 in 1941. But the number of new cases continued to increase, the notifications of pulmonary tuberculosis having steadily gone up from 4,657 in 1939 to 7,215 in 1943, and of non-pulmonary tuberculosis from 2,440 to 2,873. Returns submitted by local authorities showed that by the end of March, 1944, over 1,400 persons were awaiting admission to tuberculosis institutions, of whom over 1,200 had diseases of the lung. The difficulty of finding room for them is one of staff rather than of beds: an additional 180 beds could be brought into use if the staff were available. This shortage of staff is a more serious problem in sanatoria and mental hospitals than in general hospitals. During the year over a thousand more nurses of all grades were employed in Scottish hospitals, but the Ministry of Labour's returns showed nearly 2,000 vacancies: the paucity of domestic workers made the situation worse.

The returns of first attendances at venereal disease clinics show that the large rise in incidence which began in 1941 has been checked. Compared with 1942 both syphilis and gonorrhoea declined by 500 cases in 1943, but the numbers of new cases—4,841 of syphilis and 5,437 of gonorrhoea—are large, and are 83% and 27% above the 1939 totals. The returns, however, are not an exact index of new infections, since not all infected persons attend treatment centres. Under Defence Regulation 33B there were 43 sources of infection named by two patients, and in only one case was it necessary to prosecute to compel attendance at a clinic. Efforts were made to persuade the 784 sources of infection named by only one person to be examined and treated.

The various social services were maintained. Expenditure on sickness and disablement benefits paid under the National Health Insurance scheme again showed an increase on that of the previous year. In the absence of an analysis of the various factors contributing to this increase it is not possible to state to what extent a rise in sickness has been responsible for it. The Supplementary Medical Service, which provides a thorough medical examination for ailing industrial workers and, if necessary, an investigation in hospital or treatment in a convalescent home, dealt with 4,655 workers during the year, 2,074 of whom were admitted to hospital and 1,033 to convalescent homes. The total number of pensions under the Contributory Pensions Act increased during the year by 11,748 to a total of 427,186. In January of this year 91,743 persons were receiving poor relief—7,387 fewer than in the previous year, and 15,158 fewer than two years ago. The rehabilitation centre for disabled miners established at Gleneagles at the request of the Ministry of Fuel and Power and the Miners' Welfare Commission has given treatment to 937 miners, but has not been fully used. The centre has accommodation for 200 men, but the average number in residence was only 80, and so the admission of patients other than miners is being considered.

Despite the present difficulties, progress has been made for a post-war attack on the unsatisfactory housing conditions in Scotland. The construction of 50,000 permanent houses during the first two years after the end of the war is aimed at, and, according to the report, the local authorities have now sufficient land for 56,000 houses. During the year reviewed only very slight damage to houses resulted from enemy action. In previous air raids over 70,000 houses were slightly, and 5,500 seriously, damaged, but all except 250 of the latter have been made habitable: 2,186 houses were completed and 2,837 were under con-

struction during the year reviewed. If the housing problem is tackled vigorously then the task of the Scottish Council for Health Education after the war will be eased.

SULPHONAMIDE SENSITIVITY

With the widespread use of the sulphonamides the problem of drug sensitivity has arisen in an urgent form, and it has been so serious a matter for the Army that a caution[1] has been issued against the indiscriminate use of the sulphonamides in infectious skin diseases. For this reason it is a welcome advance to be able to describe some of the circumstances which favour the development of sulphonamide sensitivity and to point to one or two ways in which it may be avoided. Fever, a rash, and conjunctivitis are the chief manifestations of sensitivity after oral administration of sulphonamides. They appear more frequently during a second course of treatment than the first, and when they appear during the first they are seen not at the beginning but usually after the fifth day. The rash is variable in character. In many cases it is an erythematous macular eruption; in others it is an inflammatory exudate eruption on the face, arms, hands, and legs. With sulphathiazole lesions very similar to erythema nodosum may be seen. An irritating dermatitis is particularly likely to occur after the local application of sulphonamides to the skin in the treatment of skin diseases or minor injuries.[2] At first it is confined to the area under treatment ("primary eruption"), but in the majority of cases other regions, to which no sulphonamide has been applied, become affected later ("secondary eruptions"). One of the most distressing features of the trouble is its long duration. Treatment in hospital for as long as fifteen weeks may be necessary, and the photosensitivity which sometimes accompanies the eruption may prevent outdoor work for even longer periods. A patient once sensitized may remain so for as long as five years, and only a very small dose is needed to cause and excite a reaction.

The clinical features suggest that the signs—fever, rash, and conjunctivitis—have their basis in an allergic reaction of some type rather than a simple toxic action due to an accumulation of the drug, and the suggestion was strengthened when the opportunity came for Rich[3] to examine microscopically tissues from patients who had died after showing these signs. Then it was found that lesions were present in the vascular system which were like those seen in serum sickness in animals. This led to the hypothesis that the sulphonamides joined with a protein to form a haptene which sensitized the patient. There was already proof that sulphonamides form compounds *in vitro* with serum proteins, and Leftwich[4] in experiments designed to test the hypothesis has now demonstrated that there is present in the blood serum of patients who have received one of the sulphonamides for more than five days an antigen which will cause an allergic type of response after intradermal injection in sensitive individuals. Thus one step in the process of sensitization seems adequately identified. The test is simple and involves only the intradermal injection of 0.05 c.cm. of serum from a suitable donor into the skin of the flexor surface of the forearm, with a similar injection of the control serum from the same donor two inches below it. Both injections produce wheals which increase in size, reaching maxima in about fifteen minutes, and a positive reaction is defined as one in which the test wheal has a diameter at least 4 mm. greater than the control wheal. It is a test simple enough to become routine practice in those cases in which sulphonamide sensitivity is suspected, and its specificity appears great enough for it to be a reliable tool as well as a simple one. The fact that a result is obtained in a few minutes is a great practical advantage. Using patch tests with the different sulphonamides and other compounds with related structures, Park[5] has begun the next stage in the investigation into the mechanism of the sensitivity. He has shown that some patients showing sensitivity give positive reactions with only one sulphonamide. Others give positive reactions with several sulphonamides and with sulphanilic acid; as the radicle common to all these compounds is $NH_2.C_6H_4.SO_2-$ he claims that this is the part of the molecule responsible for the sensitivity. A third group react to procaine, which has the radicle $NH_2.C_6H_4-$ with no sulphonic group, and in these individuals the sensitivity is therefore less specific. These are interesting results and open up a line of attack which would repay energetic pursuit.

Several indications for the prescriber arise out of this experimental work and an analysis of case records.[6] In dermatological cases it is the recommendation of the Army Medical Department that a sulphonamide should not be applied locally or be given by mouth for more than a week, and if sulphathiazole is given by mouth it is recommended that the course be limited to four days because of its greater tendency to cause reactions. Reactions are less liable to occur if the drug is applied in the form of a thick paste (such as Lassar's) or a water-soluble cream.[7] Nicotinic acid is of no value in treating the lesions, though there may be a deceptive likeness to pellagra, but huge doses of the vitamin B complex have seemed to help. Because eczematous subjects are particularly liable to sensitization, and some of them may show an allergic response with the first dose, sulphonamides should not be applied to their skins, and oral treatment should be used only after due consideration of all the factors in each case. When inquiry before beginning a course of treatment brings out the fact that a previous course was accompanied by a rash or fever, the sulphonamide of the second course should preferably be a different one from the first, for there is in some cases at least a very strict specificity.

MORE QUESTIONS AND ANSWERS

Hard upon the results of the B.M.A.'s questionary come the details of two other attempts to probe opinion on medical services, the first addressed to medical students and the second to the public. The British Medical Students Association gave the lay press the results of its questionary last week, and unfortunately did not give the medical press

[1] *Army med. Dept. Bull.*, No. 29, 1943, Nov., p. 3.
[2] Tate, B. C., and Klorfjan, *Lancet*, 1944, **1**, 39.
[3] Rich, A. F., *Johns Hopk. Hosp. Bull.*, 1942, **71**, 123.
[4] Leftwich, W. B., ibid., 1944, **74**, 26.
[5] Park, R. G., *British Medical Journal*, 1944, **1**, 781.
[6] Dowling, H. F., and Lepper, M. H., *Amer. J. med. Sci.*, 1944, **207**, 349.
[7] Peterkin, G. A. G., *Lancet*, 1944, **1**, 646.

an opportunity to record and comment at the same time. Their questionary, published in this week's *Supplement*, was drawn up with the assistance of the British Institute of Public Opinion and distributed to students through the medical schools. Only a quarter of the students sent in replies, which shows either an apathy about the future of the profession for which they are training or a disbelief in the effectiveness of their opinion. The number of students replying was 2,588, and 51% of these declared that their reactions to the White Paper were on the whole favourable. But in answer to the question "Would you enter the National Health Service as it is described in the White Paper?" 43% said "No" and 41% said "Yes"; 15% could not make up their minds. On the other hand, 49% think that the White Paper scheme would enhance the quality of the country's medical service, and a smaller proportion—36%—believe it would suffer. On the 100% issue 72% voted in favour, and 89% approve of the principle of Health Centres. It is interesting to note that in the view of 67% the White Paper "places doctors under clinical control of local authorities." The power of the Central Medical Board to require a young doctor to give his full time to the public service in the early years of his career in case of need is looked upon as reasonable by 53% and unreasonable by 45%. As to payment, a majority —53%—favour a small basic salary plus capitation fees. On other money questions, the sale and purchase of practices should be abandoned in the opinion of 50%, while 37% raise no objection to this procedure. Sixty-three per cent. observe it would not be possible to set up in practice without incurring a debt, and 77% believed that financial assistance would be required to enable larger numbers to enter the medical profession. A very large majority—90%—consider that the political rights of doctors entering the National Health Service should be safeguarded. The opening statement of this question was as follows: "Some people paid by the State are debarred from politics or standing for Parliament."

The *News-Chronicle* of August 9 gave an account of a Gallup Poll into "what the public thinks." According to the newspaper account 75% of the panel patients questioned wanted to see some such system as N.H.I. retained if a National Health Service is not to be organized. This is quite a handsome tribute to the insurance doctors of this country, and suggests that those propagandists who represent panel patients as seething with discontent are doing what we have long suspected them of doing: that is, misrepresenting the present state of affairs in order to achieve their own ends. To the question "On the whole, would you like the idea of a publicly run National Health Service, or would you prefer hospitals and doctors to be left as they are?" 55% voted for N.H.S.; 32% said, "Leave things as they are"; and 13% said, "Don't know." This is hardly evidence of an "overwhelming" public demand for a change, although it shows that change is expected by a majority. Another question read as follows: "Who do you think should have most to say about the way medical services are arranged—the doctors, or the public through the Government?": 25% voted for doctors; 35% for the public; 32% gave an equal share to each; and 8% said, "Don't know." Eighty-six per cent. of those questioned said they had their own doctor to whom to go in case of illness, and 63% said they could get a doctor's treatment free, while 37% had to pay for it; one presumes, therefore, that 63% of those questioned come under N.H.I.

Another interesting example of public opinion was shown in the debate held on August 3 over the wireless between the Chairman of Council (Dr. H. Guy Dain), Sir Arthur Rucker (Deputy Secretary of the Ministry of Health), and the potential patient (Flight-Lieut. W. P. Matthews), who summed up the reactions of a number of people when he said: "Well, now, this White Paper on health—it's a good thing—on white paper." There seemed, at least to one hearer, a quick response on the part of the potential patient to the point of view put forward so admirably by the Chairman of Council. When Dr. Dain remarked, "We don't want doctors responsible to the Government or to local authorities: we want them responsible to the patient," Flight-Lieut. Matthews soon followed up with this interesting statement: "Yes; I see what you mean. Now I must say I've been bothered myself at the idea I've heard of people going to a Health Centre and just taking whatever doctor happens to be on watch at the time. Then perhaps you go a second time and you get a different doctor, and a third time and a different doctor; and it seems all wrong to me."

RENAL OSTEODYSTROPHY

Renal osteodystrophy is a new name suggested by Liu and Chu[1] for the disease commonly known as renal rickets. This disease, which also goes under the names of "renal infantilism," "renal dwarfism," and "renal osteitis fibrosa cystica,"[2] is characterized by rickets-like deformities, osteoporosis, dwarfism, albuminuria, anaemia, impaired renal function, and a high blood phosphorus. The pathogenesis of this disorder, the outstanding feature of which is osteodystrophy, is obscure. Because chronic renal insufficiency is responsible for the skeletal changes, which resemble those of rickets, the condition was originally known as renal rickets. This term identifies the bony changes with those of rickets; but they are not identical, although the radiographical appearances and gross skeletal deformities are similar in the two diseases. And rickets responds to vitamin D, whereas renal osteodystrophy does not. The terms "renal dwarfism" and "renal infantilism" are equally unsatisfactory because they emphasize a feature which is absent when growth is complete and do not indicate the osseous changes. Albright, Drake, and Suek[2] are inclined to consider osteofibrosis as the essential pathological skeletal lesion, and so introduce the descriptive term of "renal osteitis fibrosa cystica." Certainly rarefaction of bone and cystic absorption are the most prominent radiological features. Renal osteodystrophy, however, appears to be a good term, and at least consists of two words only. Metabolic studies by Liu and Chu on five patients confirm the low urinary output of phosphorus, the high level of serum phosphorus, and the renal failure; the phenolsulphonephthalein excretion through the kidneys averaged only 6% and the urea clearance only 10% of normal. Increased intake of phosphorus resulted in increased excretion into the gut, where it interfered with absorption of calcium, so that the patients were in negative calcium balance. Liu and Chu also demonstrated the existence of chronic acidosis, which in turn leads to a lowered blood calcium. In man and animals it has been shown experimentally that acidosis produces decalcification.[3-6] These observations provide a rational explanation of the pathogenesis of renal osteodystrophy. The disease has its origin in renal insufficiency; this hampers the urinary excretion of phosphorus, the blood level of which is raised. Increased phosphorus excretion into the gut interferes with calcium absorption, the calcium forming insoluble calcium phosphate. Renal insufficiency, by causing retention of phosphate, sulphate, and other acid

1 *Medicine*, 1943, **22**, 103.
2 *Johns Hopk. Hosp. Bull.*, 1937, **60**, 377.
3 *J. clin. Invest.*, 1931, **10**, 221.
4 *Chin. J. Physiol.*, 1939, **14**, 117.
5 *J. exp. Med.*, 1932, **56**, 823.
6 *J. Nutrit.*, 1937, **14**, 69.

metabolites, causes base to be taken up, with resulting acidosis, which in turn further limits absorption of calcium. The low calcium intake in the diet of patients studied by Liu and Chu aggravated the condition still more. All these factors contribute to produce a low blood calcium and finally skeletal decalcification.

Although vitamin D is specific in the treatment of true rickets and of osteomalacia, it is ineffective, even in massive doses, in renal osteodystrophy; in fact, it may make the condition worse by mobilizing phosphorus from the tissues. Liu and Chu found that A.T.10, or dihydrotachysterol, one of the products formed by the prolonged irradiation and hydrogenation of ergosterol, was remarkably effective in improving the intestinal absorption and retention of calcium and phosphorus in their patients. They were, however, unable to observe recalcification of the bones, possibly because treatment was not continued long enough. Since A.T.10 is also effective in true rickets, it can apparently mobilize calcium in the presence of renal insufficiency, whereas vitamin D cannot. There was some evidence that iron improved absorption of calcium in the patients studied, presumably by facilitating the excretion of excess phosphorus in the gut by the formation of insoluble iron phosphate. The administration of alkalis such as sodium bicarbonate or citrate also resulted in improvement, probably by preventing acidosis. The ultimate prognosis in patients with renal osteodystrophy is poor, but the treatment suggested by Liu and Chu—a limited-protein, low-phosphorus, and rich-calcium diet, alkalis, A.T.10, and iron—is certainly worthy of trial.

DEHYDRATED VEGETABLES

Before the war vegetables were often regarded as accessories to the more fundamental foods such as meat, fish, bread, and milk and its products. To-day, however, the shortage of these basic foodstuffs and of imported fruits has brought into proper perspective the importance of vegetables—especially as sources of vitamins and mineral salts. It is, for instance, now generally accepted that during most of the year in wartime the greater part of our civilian population depends solely on vegetables for its supply of vitamin C (Harris and Olliver[1]). The importance of supplying vegetables to the fighting Services is also fully recognized. However, transport and storage of these foods provide a problem which, while significant in peacetime, assumes tremendous proportions in time of war. Green vegetables are especially difficult, as they readily wilt and lose both palatability and nutritional value. Moreover, they contain over 90% of water, and their transport and storage must therefore be regarded as an extravagant use of valuable shipping space. The answer to these problems was found in dehydration. Unlike the old-fashioned drying methods, dehydration is a scientifically controlled process by which colour, texture, flavour, and nutritional value of the raw vegetables are well maintained. Since ordinary drying methods have a damaging effect on some of the nutritive constituents, this aspect of dehydration has received special attention both in the United States and in this country. Tressler, Moyer, and Wheeler,[2] for example, working in America with factory-produced dehydrated vegetables, have shown that there is a high percentage retention of carotene on dehydration. Dehydrated cabbage was also found to retain nearly all its initial vitamin C and contained over 300 mg. ascorbic acid per 100 g. Similar data, much of them unpublished, have been collected for factory-produced material in this country. Two important stages have also to be considered beyond the actual production—i.e., storage and reconstitution, which latter is the soaking and cooking of the dehydrated vegetables. As to storage, various factors such as moisture content, temperature of storage, and presence of oxygen have been shown to affect both culinary quality and nutritional value (Tomkins *et al.*[3]). These factors can be largely controlled by suitable packaging, and the use of cans is generally adopted. Nitrogen is also used for packing those vegetables likely to be affected by storage in air. Dehydration and storage processes can be controlled scientifically, but the colour, flavour, texture, and nutritional value of the reconstituted material all depend ultimately on the efficiency of the cook. This is of course equally true of fresh vegetables, and conditions of cooking have therefore to be identical when comparing the two materials. The effect of variation in such conditions upon the nutritional value of dehydrated vegetables has been studied by several investigators (Fenton *et al.*[4]; Allen and Mapson[5]), and it is generally agreed that reconstituted dehydrated vegetables have a high food value. Palatability is too closely linked with food value to be ignored, and the experience of Macrae[6] with the use of dehydrated vegetables in the R.A.F. must be regarded as of special importance. He found that the dehydrated foods not only had a higher content of ascorbic acid but were less likely to be left on the plate than were cooked fresh foods. Whatever, therefore, the post-war prospects of dehydrated vegetables, they are undoubtedly invaluable at the present time for the part they are playing in maintaining the health of men and women in the Services.

1 *Lancet*, 1943, **1**, 454.
2 *Amer. J. publ. Hlth.*, 1943, **33**, 975.
3 *J. Soc. chem. Ind.*, 1944 (in press).
4 *Amer. J. publ. Hlth.*, 1943, **33**, 799.
5 *J. Soc. chem. Ind.*, 1944, **63**, 78.
6 *British Medical Journal*, 1942, **2**, 255.

PENICILLIN FOR CIVILIANS

As we announced in the *Journal* of July 22 (p. 119), a limited supply of penicillin will soon be available for the treatment of civilians. So that available quantities may be used to the best advantage the Ministry of Health has decided to invite the Medical Faculties and Schools of Universities to be responsible for its use and distribution. By allotting to each school an area corresponding in general to the Civil Defence Region in which it is situated the whole of the country should be covered. In the London Sectors the medical school that controls the Sector will be responsible for the Sector area, and if, as occurs in four of the Sectors, there is a second medical school, that school will be responsible only for the patients that normally seek admission to its associated hospital. Most of the cases that should have penicillin will be in-patients, and if the hospital is not one of those granted a supply it should apply to the medical school or the associated teaching hospital of the area, giving full details of the diagnosis. If apparently suitable it might still be necessary for the case to be transferred for further investigation to the teaching or other approved hospital, whichever is most convenient. If, however, the patient is not a hospital in-patient but is in private care the practitioner should arrange for his admission to hospital, which would then be responsible for the diagnosis and for the application for penicillin to the medical school or teaching hospital of the area. If any difficulty should occur in obtaining admission to hospital the practitioner could apply direct to the medical school, which would, in a suitable case, arrange for admission to an approved hospital. Supplies of penicillin are being sent to Scotland and Northern Ireland, which have arranged for their medical schools to be responsible for its use and distribution.

MEDICAL EXPERIENCES IN THE BURMA WARFARE

A correspondent in England sends two extracts from a long letter written to him on June 23 by his junior partner, who is anaesthetist in a mobile surgical unit. The first gives a vivid account of active service in Burma seen through medical eyes. The second puts the point of view of a young man who had not been long in general practice before the outbreak of war and who is concerned about his position after demobilization.

First Extract from Letter

"I am writing from Srinagar in Kashmir, where we are just finishing a fortnight's holiday. We have been staying in a houseboat and enjoying the most delightful weather and scenery it has been my fortune to experience. The journey here from Burma has been appalling, but Kashmir has justified our high expectations of it and has been a very pleasant break from jungle life. I now claim to be somewhat of a veteran in that mode of living, having completed nearly two years in the bush, and frankly I am getting a bit tired of it, especially during the lulls in activity. It is difficult to know what to write to you about, but perhaps as an old soldier you may be interested in a few aspects of our type of warfare and in a few of the non-censorable episodes. I hope I can avoid histrionics.

As you know, our recent campaigns have been much more successful than the 1942–3 variety. We have, I think, brought jungle warfare right up to date and seem to keep on learning new tricks of our own, and have long since explored the depths of our opponents' ingenuity. At any rate it is a game in which you judge the results by the counted bag; and Burma, or at least the part I have been associated with, stinks to high heaven of Jap dead. Their philosophy of the honourable death reaps us a rich and handsome harvest. One cannot deny their courage. I don't think the blighters are afraid of anything, but they have not managed to put this virtue above the animal plane, and, instead of being an asset, as it was at one time in the early days of the war, it has become one of their biggest debits. They walk into death, usually in the form of a British or Indian soldier sitting quietly and obeying the dictum about not shooting or bayoneting until he sees the whites of their eyes. I remember the early days in Burma when we only had to hear of near-by Japs to feel our hearts flutter. The wondrous stories which we were told, and we told, of what amazing tricks Nippon had up his sleeve had precisely that effect—good propaganda for exploiting the fear of the unknown. Now we recognize that he is a bitter fighter, and a fighter to the end, but as a simple mathematical proposition he is an inevitable loser. He is not easy to eliminate. It requires an abundance of courage on the part of our troops to undertake these battles to the death. There is no White Flag out here, and the British soldier—the average one—has a surplus of courage; the morale is absolutely terrific. All are extremely proud of our Command and Army, and faith in the leaders is not lacking.

As an example of what is being done: at one time a group of us were cut off by the Jap for some weeks—we were a pretty good sitting target—and things were decidedly unhealthy. However, our air supplies arrived regularly on the dot, and the thing that impressed me most was our daily newspapers were dropped in adequate quantities and on the day of publication! And the powers that be did not forget to parcel in plenty of beer, and magazines, etc., for the wounded. Things never looked so bad after one had been able to glance at the paper and sip one's beer before turning in. During this particular 'do' L—— and myself probably established a record for front-line operating. We could actually see the wounded being wounded, and usually had them outside our theatre in 5 or 10 minutes. I think that on the balance between conditions of work and time we (I am not boasting, it is merely circumstances) saved more life and limb than we could ordinarily have done; at any rate we got our abdominal figures up to a 50% survival rate, and you can imagine what the peace and quiet for nursing was like. Fortunately our unit came out of this 'do' fairly intact (at one time we were virtually captured), but we did have the misfortune to lose our Indian assistant surgeon, who was captured and later shot, having gone through a pretty brutal period in between. The Japs are, believe me, quite subhuman.

Our living conditions by force of Nature are pretty foul—I cannot imagine a worse climate—but we manage to make the best of them, and are being pretty successful in combating the many prevalent diseases. The troops are well educated in preventive medicine, which is a continual struggle alongside the other and major one, and once more we are winning the day. The old story of the medicals being a rope round the combatants' neck is not true out here; one is offered so much help and assistance from the other arms of the Service that one is continually and regretfully refusing aid! They told us at Crookham never to expect help without having to fight hard for it. Quite untrue!"

Second Extract

"I am afraid I have lost interest in the 'White Paper'—soldiering and medical politics seem to clash a little—but have read the abbreviated official report and found it wordy and uninspiring. It does not give one much idea of what is to happen to a practice like ours, which, candidly, is all I am now interested in. I am more and more looking forward to getting settled down at work again, and anxious to know if the Government is going to allow me. It seems a hell of a time to have been away from one's work, and impossible to guess when one may get back to it. What do you think will happen?"

LONDON COUNTY COUNCIL

The London County Council proposes to participate in the scheme of the County Councils Association and the Association of Municipal Corporations (*Journal*, Aug. 5, p. 187) to set up a National Ophthalmic Research Council, and will contribute a sum up to £2,000 for a period of five years towards the funds of the council on the understanding that the scheme will then be reviewed in the light of the relevant circumstances.

It is proposed for the present not to fill the position of deputy medical officer of health and deputy school medical officer vacant by the resignation of Dr. Andrew Topping. In the meantime Dr. R. C. Harkness, one of the two principal medical officers, will act for the medical officer of health during his absence, and a third principal medical officer will be appointed. It is also proposed to second to the central office staff of the County Council an experienced medical superintendent of one of the hospitals for a period up to six months in order that he may undertake the visitation of all the hospitals, make contact with the staff, gain information generally with regard to the hospitals service, and report on the desirability of any changes or improvements which may appear to merit consideration in relation to the proposed National Health Service.

The Mental Hospitals Committee of the L.C.C. has been considering the question of medical staff in the mental hospitals service undertaking remunerated and unremunerated outside work, including work at voluntary hospitals. Full-time medical officers at hospitals and institutions and at the central pathological laboratory will be encouraged to undertake outside work, such as occasional lectures to students or to societies, or to act as examiners to outside authorities, provided that permission of the medical officer of health is obtained for remunerated work in all cases, and that in the case of unremunerated work permission is obtained from the medical superintendent of the hospital or the director of the laboratory.

It was reported to the last meeting of the Council that the special scheme for transferring expectant mothers to emergency maternity homes outside London shortly before confinement, which has been in operation continuously since the summer of 1940, has now had to cope with a sudden and heavier demand; it has also been extended to 18 additional evacuation areas. The shortage of midwives has created a difficulty. The scheme, however, has operated successfully, and in the course of six weeks over 2,100 patients were sent to maternity accommodation specially reserved for them.

BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH

Prof. T. R. Elliott's Retirement

Prof. T. R. Elliott had already served as a member of the advisory board to the Beit Memorial Trustees since 1922 when in 1930 he succeeded the late Sir James Kingston Fowler in the important work of the board's honorary secretary. During the fourteen years which have followed, his intimate experience of the working of the Trust, and the skill and labour he has devoted year by year to the applications and reports which have fallen to be considered, have been of the highest value to the work of his colleagues on the advisory board, and of the trustees to whom he has carried their recommendations. In 1935 he himself became a trustee. The continuity of the policy of the trustees and their advisory board, and the ease of its adjustment to changing conditions without any lowering of standards or narrowing of aims, have owed much to Prof. Elliott's enlightened enthusiasm for the work of the Trust, his pride in its achievements, and his vision of its possibilities. And he has acted as a friend and adviser to many of those whom he has helped to elect to Beit Memorial Fellowships, two to three decades and more after he had held one himself (1911–12).

When Prof. Elliott retired in 1940 from the professorship of medicine at University College Hospital Medical School he had intended to relinquish also his work for the Beit Advisory Board; but the successor to the secretaryship already nominated found that war demands claimed his whole time, and Prof. Elliott was persuaded by his colleagues to continue further his services to them and to the Trust. Now at length he has been obliged to claim a rest from duties carried so long and with such distinction. He hands on a fine tradition to his successor, Dr. A. N. Drury, director of the Lister Institute.

CONTROL OF NARCOTIC DRUGS

The Permanent Central Opium Board held its 44th session in London at the end of July under the presidency of Sir Atul Chatterjee. The other members present were: Sir Malcolm Delevingne (United Kingdom), Mr. J. H. Delgorge (Netherlands), Dr. George Woo (China).

In a communiqué the Board states that it reviewed the statistical information recently received and also the measures of control over the trade in and manufacture of narcotic drugs which were under consideration by the competent authorities for countries which are to be liberated. Three months ago the Board issued a report containing recommendations as to the action which, in its opinion, should be taken to minimize the potential dangers in the present situation. The Board understands that its recommendations have received the attention of the military authorities concerned with Western Europe and that decisions have been taken which in substance are in accord with the Board's recommendations and which will be carried into effect as occasion arises. It hopes that decisions will be taken for the other theatres of war at an early date. The danger is not confined to Western Europe, and the Board emphasizes the importance of adequate measures to the same end being taken in all the other theatres of war, especially in South-Eastern Europe and in the Middle and Far East. For the full exercise of its supervisory functions, information should be available to the Board as to the steps progressively taken in the liberated areas—e.g., Italy—for the establishment of the national control.

PRESTON HALL

In 1925 Preston Hall, the British Legion village at Maidstone, was taken over for the treatment and care of tuberculous ex-Service men. In 1934 Douglas House, near Bournemouth, was acquired for the treatment of chronic ambulant patients, and in 1943 the same council of management acquired Nayland Sanatorium, near Colchester, for the reception of cases of tuberculosis among Service and ex-Service women. The number of sanatorium beds at Preston Hall is 175, with 139 houses in the village for ex-patients, and the other two institutions have a further 290 beds. The medical director, Dr. J. B. McDougall, in his report for 1944, says that from the administrative standpoint the greatest problem has been to preserve a balance between the medical and rehabilitation aspects of the work. Orders for the industries which are carried on at all three places have come in at a rate which has overshadowed anything known in peacetime, but the temptation to overwhelm the industries with orders has been resisted. Any tendency to expand the industrial aspect of the village settlement must never be allowed to prejudice its main function, which is the care and treatment of tuberculosis. In the near future it is expected that 2,000 cases of tuberculosis from the various Service departments will have passed through the wards. Certain of the wards in an E.M.S. hospital have been allocated for their reception, and the collaboration with the military wing has been close and efficient.

Correspondence

Freedom to Publish

SIR,—The letter of the Secretary of the B.M.A. addressed to voluntary hospitals and local authorities (*B.M.J. Supplement*, Aug. 12) advocating that medical officers should be free to publish scientific material is much to be welcomed, but with the reservation that the letter does not go far enough. The inclusion in the last paragraph of the words "in other ways" seems to acknowledge the need for some amplification.

The writer of the annotation in the same issue of the *Journal* (p. 219) is more definite; he says truly: "In the profession of medicine there are many matters of interest and importance to doctors that cannot be described by the words 'purely scientific and technical.'" The latter quotation is the phraseology of the L.C.C. amendment. In no way does it remove the censorship on publications—anything in the least critical that may offend the bureaucrat can still be censored as not sufficiently pure. Unfortunately the wording of the B.M.A.'s letter invites further such amendments or *ad hoc* resolutions of similar character.

The confusion that is occasioned by the term "scientific freedom" is well illustrated by the writings of Geoffrey Bourne, who has developed in some twelve columns of the *Journal* the theme of the B.M.A.'s letter (see *B.M.J.*, Feb. 20, 1943; May 29, 1943; June 3, 1944). Thus, "No system is to be tolerated in which free speech on medical matters, free criticism of medical affairs, and free publication of scientific work are discouraged or in the slightest way impeded" (*B.M.J.*, Feb. 20, 1943); "Complete freedom of speech, criticism, and medical practice must be retained. Any member of a State service must have the right to speak his mind about his political or professional superiors on any question of medical science, practice, or policy" (*B.M.J.*, May 29, 1943); "In any State Medical Service all medical men shall have full right of expression and criticism in medical matters" (*B.M.J.*, June 3, 1944). In spite of this consistency the three articles must leave any student extremely confused, for while advocating this active role of publication and criticism Geoffrey Bourne apparently wishes to keep quite free from politics: "Medicine and science must not be political" (*B.M.J.*, May 29, 1943). How can a medical man be free "to speak his mind about his political or professional superiors on any question . . . of policy" without being political? This contradiction is marked throughout the articles, and the confusion is in no way clarified by such phrases as "Politics can often be turned on like gas, but science cannot be turned on like water" (*B.M.J.*, May 29, 1943). In his hypothetical campaign for the exposure "of the scandalous tuberculosis services of Blimpshire" (*B.M.J.*, June 3, 1944) Geoffrey Bourne follows well-recognized political methods.

The truth is that scientific observation and publication have an influence on politics. Some scientific articles have a large political content, some have little. It would not be very political to-day to publish an article on the earth's movement in relation to the sun, but Galileo found it political enough. Why did Harvey delay publishing his observation on the circulation of the blood for so long? An article to-day on the technique of the Wassermann reaction has little political con-

ment, but many scientific articles bearing upon the diagnosis and control of syphilis could have a great deal.

What we need to establish is freedom to speak and write on matters that affect our profession whatever the political implications may be. This is the prophylactic against bureaucracy and would do much to ensure a democratic medical service. I emphatically agree with Geoffrey Bourne that "the democratic system of medical service is entirely compatible with State control" (*B.M.J.*, Feb. 20, 1943).—I am, etc.,

King's Langley, Herts. TOM GARLAND.

The Kenny Treatment of Poliomyelitis

SIR,—In the *Journal* during the past two years there have been various references to the Kenny system of treating poliomyelitis. From these articles it would appear that a great deal of enthusiasm had been aroused, mainly in the popular press, but also in some medical centres of the United States. You published two critical reviews, and the conclusions seemed to be that the Kenny methods and theories did not justify the attention that was being paid to them in the United States, and comment was awaited from American authorities who could be trusted to give a sound view upon the matter.

It will interest you, I think, therefore, to have these extracts from a report of a committee of the American Orthopedic Association, given to me in a personal letter and probably paraphrased.

1. "Muscle spasm." Stiffness in the neck and back has long been recognized, and it disappears spontaneously. There is seldom spasm in the extremities, and this has nothing to do with the final result.

2. "Mental alienation." To say that the flaccid muscle is normal is not true. It means a temporary paralysis or stretch paralysis, and was discussed by Jones in 1911.

3. "Co-ordination is disorganized." This is another term for muscle incoordination and was used in 1912.

4. "Paralysis." It is thought that the handling necessary for the Kenny treatment might make the patient worse. Putting the patient in the normal standing position has been recommended for the past 30 years. Heat has been used for many years. Hot packs do not always relieve the pain. The pain can easily be relieved by other measures. In some cases the hot packs seem to prolong the muscle spasm. The spasm disappeared in some cases when the packs were stopped. She insists that a very rigid technique should be followed for twelve hours each day. This is not essential.

5. "Restoration of muscle function." Jones and Lovett many years ago advised the same in their textbook.

6. "No braces or splints are tolerated." Splints are beneficial in some cases. The patients should be allowed to wear braces and be able to discard crutches.

7. "No respirator should be used." The committee thinks they should be used when needed.

8. "The family are told that the Kenny method would have prevented paralysis." She tells parents that if she could have treated the patient early it would not have gone on to paralysis. This is wrong. Some of her patients which she treated early before they were paralysed developed severe paralysis. She does not recognize spontaneous improvement. She claims that it is her method which "cures" the patient. We know that 80% improve spontaneously.

9. "Muscle tests." Her lack of muscle tests is to be condemned. Muscle tests carefully done are not harmful. She is the only one who thinks they are harmful. She says that only 13% recover by the other methods. This statement is wrong. She has been shown abundant evidence in medical literature that from 70 to 90% recover by the orthodox methods.

10. "Deformities." She says that no deformities have developed following her treatment. Her cases have not been followed long enough. Severe paralytic scoliosis does not show up until after three years. Her cases will need to be watched longer. Contractures of the muscles must be prevented early.

In summarizing the report Ghormley said: "A study of 750 cases showed that continuous hot packs are of questionable value, and that it is a waste of man-power and hospital beds."

Gill stated that the members of this committee had different views about this treatment at the beginning of the study, but that they were all agreed by the end of the study.

Albert Key said: "The concept of Miss Kenny is wrong. What is good in her treatment is not new, and what is new in it is not good." He thought that another paragraph should have been added to the report making it still more clear that the committee did not recommend her treatment.

—I am, etc.,

Exeter. NORMAN CAPENER.

Registration of Specialists

SIR,—I have just read Lieut.-Col. Gear's instructive paper read and considered in conjunction with the 1,509th "Old and True" in the *Times* of Aug. 5. The relevant part of the quotation is: ". . . it requires art in order to persuade, none is needed in order to command. . . . When the power that makes the laws and the power that applies them are identical, laws are useless. Every exercise of authority that goes beyond what is really necessary is a tyranny"—Turgot.

And, having read the "Old and True," let us turn to the *Journal* (p. 188) and, after perusing it, ask ourselves whether the suggested registration of specialists does not go beyond what is really necessary.

First, it would be reasonable to settle the problem of what (if anything) is wrong about our specialists. Secondly, we might reasonably ask ourselves whether we are likely to get better specialists by making young men and women decide on a specialist career immediately after (or even before) they have become qualified. And, thirdly, we must face the fact that, if the future registration of specialists is to depend upon the possession of higher qualifications and upon a period of postgraduate training (but still *in statu pupillari*), we shall have two distinct branches of the medical profession: one firmly and permanently fixed in the groove of general practice, and the other in the even deeper groove of specialism. No passage from the former to the latter group would be possible, except perhaps for a very small number of general practitioners with private means, who could give up lucrative work for five years in order to be subjected to specialist training.

There are other features of the suggested legislation which should make us (and our leaders) pause. Thus, there could never again be another Sir James Mackenzie, who, graduating from a busy general practice into specialism, became the father of modern cardiology. Of course, there may be those who would contend that he would have been a still greater man if he had had five years of postgraduate training in his specialism. I doubt it, and, I imagine, Sir, that you do also.

Then again, we should remember that, learned though the members of the General Medical Council undoubtedly are, they have not been endowed by statute or (so far as I am aware) by miracle with the gift of prophecy. And, as they have not been so blessed, it is difficult to see how it can be assumed that they will foresee and cater for new specialties that may be needed in the future. I am, of course, presuming that it is not supposed that the book of knowledge is already completely written.

One would, not unnaturally, like to know whether the specialist of the future will be allowed to examine and even treat maladies that are not included (by, I suppose, delegated legislation) in the schedule of diseases he is licensed to deal with. Or must, for instance, the haematologist (if haematology be permitted the sacred status of a specialty) who is treating a patient with pernicious anaemia call in a neurologist if the patient develops signs of subacute combined degeneration of the cord? Or must he have the continuous collaboration of a neurologist, because he (the haematologist) is not supposed to be able to recognize the early (or, indeed, any other) stages of the nervous complication?

Of course the present suggestions are for the interim period, and it will not be until later that the compulsory postgraduate training will be essential for admission to the register of specialists. At present persons recognized by their colleagues (who know them) as specialists will be recognized as such by the General Medical Council (which does not know them). But the day will come when some youngster, after his five years of postgraduate training, will be admitted to the specialists' register and will tell his older colleague that he himself is a qualified specialist while he (the older man) is only a registered one. Do not tell me that this is impossible: both dentists and State-registered nurses have met the same difficulty.

May we not, Sir, with all respect, ask the Mother of Parliaments to refrain from converting herself into a purely legislative assembly, so that she may have time to perform her centuries-old duty of protecting the people from infringement of their ancient rights by the executive?—I am, etc.,

London, W.1. A. PINEY.

The Surgeon and the Anaesthetic

SIR,—Recent correspondence concerning the respective merits of old and new methods of anaesthesia seems to emphasize once again that the safety of any anaesthetic depends chiefly on the technical skill and clinical judgment of the anaesthetist. Like most anaesthetists I use a little chloroform on occasion and under certain special conditions, but Dr. Herbert Brown's belief (Aug. 5, p. 191) that light chloroform anaesthesia is not especially dangerous only holds good when the skill and judgment of the administrator are above suspicion. In incompetent or inexperienced hands chloroform is potentially an extremely dangerous and toxic drug, and for this reason many authorities recommend that it should be banned from general use.

Sudden death during light chloroform anaesthesia is particularly prone to occur in two classes of patient: (*a*) the violently excited and struggling patient, with an obstructed airway due to pharyngeal or laryngeal spasm; and (*b*) the pale, "quiet" individual (usually under 30) suffering from general debility and obvious oxygen lack. In the former case a struggling and cyanosed patient suddenly takes a deep breath of concentrated chloroform vapour with the customary well-known result. In the second group the tidal respiration may be so shallow that the anaesthetist (often an inexperienced house-surgeon or practitioner) sometimes does not know that the patient is dead until an onlooker chances to remark that "The patient doesn't look very well, doctor!" Catastrophes such as these are less likely to occur if care is taken to maintain a free airway and oxygen is administered continuously before and during induction, but the only certain way to prevent them is not to use chloroform.

The technique of administration and precautions to be adopted in injecting pentothal have been very fully described in the literature, and if mishaps occur due to faulty judgment on the part of the administrator the remedy is not to stop using pentothal but to employ a more experienced anaesthetist. When injected intermittently in small doses and with due regard to the condition of the patient the danger of overdosage is very remote, especially if oxygen is administered throughout. When trouble arises it is generally because insufficient care has been taken to keep the tongue forward and the airway clear. Pentothal should not be used if the airway is likely to become obstructed, or if there is a possibility that haemorrhage from the mouth or post-nasal space may set up laryngeal spasm; if this should happen endotracheal intubation must be carried out at once. Lastly, it is safer to limit the dose according to the condition of the patient. Personally I prefer to use pentothal for induction of anaesthesia, or short procedures lasting not longer than 20 minutes.

Dr. Brown's apparent surprise at the sensible precautions suggested by Dr. Murphy (July 15, p. 93) and others is surely unnecessary. Oxygen, cardiac and respiratory stimulants, etc., should always be available when an anaesthetic is being administered, whether the method of administration be intravenous, inhalational, spinal, local, or even no anaesthetic at all. The last contingency is by no means an exaggeration. Not long ago, when I was preparing to inject pentothal for a dental case, the patient suddenly went off in a "dead faint" (either at the sight of the needle or myself, I am not sure which!), and, at my suggestion, the extractions were completed by a slightly horrified dentist, while 100% oxygen was administered under pressure through the nose-piece of the McKesson apparatus. However, I do not recommend this mode of anaesthesia, although, from the standpoint of economy, it has certain advantages.—I am, etc.,

Newcastle-upon-Tyne. PHILIP AYRE.

SIR,—Having read Dr. Herbert Brown's letter with interest, may I offer the following criticisms from the point of view of a specialist anaesthetist.

1. Quoting Dr. Elam (Feb. 19, p. 263), Dr. Brown says, "Modern anaesthesia will become (if it has not already done so) far more dangerous than chloroform anaesthesia at its worst." Yes, in unskilled hands. All potent drugs—chloroform, trilene, and cyclopropane (which Dr. Brown does not mention; why?), pentothal sodium and allied drugs—are dangerous in unskilled hands. Is it not those who have done a few simple cases successfully with a certain method—e.g., pentothal sodium—who are apt to develop that false sense of security described by Dr. Elam? The more one uses these drugs and discovers their variations from case to case the more wholesome respect one has for them.

2. Dr. Brown says, "A new and relatively untried drug such as pentothal. . . ." This drug came into wide use in November, 1937, as a result of published reports. Its forerunner, evipan sodium, had been in use for several years previously. As to the relatively "untriedness" of the formidable number of Allied casualties in this war very few requiring anaesthesia fail to have pentothal sodium. The number of administrations, therefore, in the past four years alone must be enormous.

3. "The surgeon should choose the anaesthetist who will give the anaesthetic he prefers" ("he," I presume, meaning the surgeon) "in the manner required and not continue the administration unduly." If, as is implied by this, anaesthetists must be one-method men or mere technicians, let us have nurse- and orderly-anaesthetists to carry out Dr. Brown's instructions implicitly!

Most modern surgeons, I believe, prefer an anaesthetist with experience in the use of all anaesthetic and analgesic drugs (ancient and modern) by all recognized methods and routes, who can be relied on to give that drug or combination of drugs most suitable to each patient by such methods, routes, and apparatus as may be most expedient, and so to submit the patient to the surgeon that the operation may be most easily performed with the least after-effects. Such a standard cannot be attained without much full-time study and experience. Modern anaesthetics require a full-time specialist. They cannot be successfully practised as a busy G.P.'s hobby. (In compiling the proposed "Register of Specialists" it would be well that this point were considered.)

Finally, whatever the advantages and dangers of that old "bone of contention"—chloroform—I never use it because it makes the anaesthetist very sick, and it is as well to credit one's patient with at least as much sensitivity (in all respects) as oneself.—I am, etc.,

Wallasey. UNA M. WESTELL.

Progesterone

SIR,—I am grateful to Dr. Richard Sands for pointing out that in 1932 Mr. Christie Brown put forward the theory which I outlined in the *Journal* of June 24.

My letter was partly by way of being a disclaimer, as I was afraid Dr. Walter Calvert might possibly imagine that when I made a personal communication to him along the same lines I was claiming some originality for the theory so far as I was concerned. In a subsequent letter Dr. Calvert seems to imagine that I imputed that he, Dr. Calvert, was claiming originality for the theory. I think that if he reads my first letter again he will see that I made no such implication, but merely made it clear that his views might be based on my personal communication to him, and that the views in that communication were not my own, but were, so far as I knew, those put forward by Mr. Barton Gilbert.

In suggesting that this theory had been originated by Mr. Gilbert I have since learnt that in the main I was in error. In the *Journal of Obstetrics and Gynaecology of the British Empire*, Autumn, 1932, appeared an article by Mr. Christie Brown entitled "The Posterior Pituitary Gland in Pregnancy." Briefly, his theory suggests that the decreased sensitivity of the uterus to the posterior pituitary during pregnancy is due to the secretion of the corpus luteum—as has been pointed out by H. Knaus—and that in the same way one finds relaxation of the intestine leading to constipation, relaxation of the blood vessels with lowering of the blood pressure, and the production of varices and also early morning sickness.

As it has been pointed out that Mr. Gilbert did not originate this part of the theory which I outlined, I may well be in error in suggesting that he was responsible for the rest of it as well. Once one has grasped the underlying principle of a theory of this sort, it is very easy to extend its implications; so who was first responsible for suggesting that albuminuria of pregnancy, primary uterine atony, accidental haemorrhage, and pyelitis of pregnancy were due to a similar cause I cannot definitely say. As the outlines of the theory appear to be moderately well known, it may well be that I, in company with many others, have unwittingly extended its original implications to make it fit in with similar clinical entities which have been encountered in practice.—I am, etc.,

London, W.1. D. G. WILSON CLYNE.

*** This correspondence is now closed.—ED., *B.M.J.*

Action of Penicillin

SIR,—Sir H. W. Florey, in his interesting article on penicillin, states that it is a "bacteriostatic." What does he mean by this term? Are we to understand that such an action, which takes place outside the body, is the one which takes place in the body, and is followed by recovery from the disorder? In other words, is penicillin to be used for the treatment of the "disease" or of the patient?—I am, etc.,

Swansea. G. ARBOUR STEPHENS.

Infant Feeding

SIR,—Dr. Boucher (July 29, p. 160) calls attention to the prevalence of difficulties with infant feeding. Much unnecessary suffering could be prevented if cases of deficiency of breast milk were more promptly recognized and dealt with, and if mothers who cannot feed their infants entirely on breast milk were given adequate instructions about artificial feeding based on the methods recommended by Drs. Paterson and Smith in their book *Modern Methods of Feeding in Infancy and Childhood*. Some of the points on which these methods differ from others commonly in use are worth noting:

1. The *quantity* of the feed is calculated primarily according to the weight of the infant, larger babies getting larger feeds. Thus the needs of individual infants whose weights at birth or natural rates of growth differ from the average receive due consideration. If any difference is made between the quantity of feeds at the same age, it is the smaller babies who are given the larger feeds, on the assumption that all babies ought to have the same weight at a given age.

2. The *composition* of the feed is a simple milk, sugar, and water mixture, and for infants between 1 and 6 months old two-thirds of the total volume is made up of whole full-cream milk. Some methods of feeding give too low a concentration of milk and others too high.

3. It is made clear that *sugar* in appropriate amounts must be added to the feeds in order to get satisfactory results with artificial feeding. But the directions on tins of some brands of powdered milk mention the addition of sugar as optional. In giving a figure for the amount that may be added they fail to grade it according to the quantity of the feed, and the amount suggested is too little for all except the smallest feeds.

In addition to information about composition and quantity of feeds, a mother needs advice on the technique of bottle-feeding, including such matters as preparing a teat with a hole of the right size, and ensuring that the feed is reasonably near body temperature when it is being given.

There are some babies whose natural rates of growth are very considerably above the average, and who are only satisfied when receiving feeds that enable them to grow faster than the commonly accepted maximum rate. When such an infant is breast-fed and the mother has plenty of breast milk, and when the mother does not allow the natural process of feeding to be interfered with by undue fussing about scale and clock readings, then no difficulty arises. The large gains in weight are only discovered incidentally. The baby is contented. When, however, such an infant is being bottle-fed or if the mother has not sufficient milk to satisfy him, he may then appear as one of the cases of crying and fretfulness of unknown origin. There is nothing clinically wrong. According to accepted standards the gains in weight are satisfactory and the amounts of feeds are sufficient. Nevertheless the crying and fretfulness are due to the fact that he is not fully satisfied by the feeds. Increase them either in quantity or in concentration, or both, and he becomes satisfied. I think that if the existence of infants having these high growth rates were more generally recognized more cases of fretful infants and distressed mothers could be effectively remedied.—I am, etc.,

Leeds. SYLVIA DICKINSON.

Post-operational Strain in the Navy

SIR,—I was interested in the article on post-operational strain by Surg. Capt. Curran and Surg. Lieut. Garmany (July 29, p. 144). I do not think, however, they have stressed sufficiently that it is a psychophysiological outrage when one is obliged to pass too quickly from a state of tension to one of relative relaxation. The holiday neurosis, whereby the over-tense individual sustains an increase in anxiety during the first days of his vacation, is well known. Perhaps the authors would be interested to know that it is an absolute necessity in teaching patients the art of conscious relaxation to avoid relaxing them too soon. To aim at achieving too quickly a state of deep muscular relaxation is to promote feelings of anxiety and restlessness, which more than ever prevent the patient from relaxing. This slight criticism is not to say that one does not appreciate very much an outstanding article.—I am, etc.,

Bath. A. GUIRDHAM.

SIR,—If one turns from the particular and clinical findings to the general and to trends in our cultural life, it is a fact that there has been for years an increasing tendency for the population—more noticeable in the large towns—to become dependent on artificial stimulation for their amusements and more passive in their attitude to leisure life in general. The machine age, with its damping effect on active handicrafts, has extended increasingly to the whole art of living, and the male—Surg. Capt. Curran's findings (July 29, p. 144) are limited to this sex—is becoming more sedentary and receptive in the way he spends his non-working life; he relies more and more on external stimulus to be provided and less and less on ideas arising within his own ego. Wartime increases this tendency, especially in the civilian population, since it is harder for the individual to come by the materials for his particular hobbies and to get the facilities for participation in sport and games. This sessile attitude toward life belongs to the ovum rather than to the spermatozoon, and it is, I think, largely contributory in Surg. Capt. Curran's findings.

It can truly be said that similar findings were commonly met with in behaviour difficulties in the male long before this war, and the interacting causes should be given serious consideration in any schemes for social improvement after the war. It may be that if the factors responsible for this reliance on commercial provision of stimulation at the expense of initiating his own libidinal drives continue, this sessile attitude may in the course of time become a permanent mutation in our male culture. Against this lack of ego-interest may be put the enormous increase in the hobby of gardening during the war.—I am, etc.,

London, N.W.8. JOHN MACKWOOD.

Service Medicine

SIR,—The attack on certain aspects of Service medicine in your issue of April 1 provoked Air Cdres. Cade and Conybeare (April 22, p. 574) not only to paint an idealistic picture of medical organization in the Services but also to dismiss the anonymous writer as selfish or lazy and incompetent. I submit, Sir, that these R.A.F. consultants are making a serious mistake. Of the hundreds of temporary medical officers in all three Services to whose opinions I have listened since 1939 only one failed to deplore the anomalies and abuses of Service medicine, and this single exception admitted that he disliked clinical work.

Dr. Geoffrey Bourne has rightly remarked (*B.M.J.*, 1943, **1**, 673) that administration should be the servant, not the master, of the public and its doctors. Service medicine is, on the contrary, ruled by officers who regard medicine as the slave of administration, and the consequences of this radical defect are fatal. Admittedly the skilled doctor is helpless without administrative machinery to provide essential supplies and transport. Such machinery can, however, be devised and operated *for the most part* by people whose training is far shorter than that required to graduate in medicine. Yet hundreds of medical officers, at a time when civilians cry out for more doctors, are engaged exclusively in so-called administration. I purposely say "so-called" because the word "administration" is often a pretentious euphemism for the process of signing redundant documents unread.

How, it may be asked, can these men reconcile their professional conscience to the performance of tasks within the capacity of a layman? Promotion is the answer. Simple administrative duties, easily mastered within a week or two, carry a higher rank than do most of the specialized clinical posts, although the latter cannot be efficiently filled except by people of long

training and experience. This subordination of clinical skill has placed overwhelming power in the hands of regular officers, who, in spite of being numerically negligible since the vast wartime expansion of all Services, yet hold nearly all the key positions. They are selected not only to command important hospitals and preside over medical boards but even to exercise control over clinical departments, thereby taking credit for work done by their Service juniors and professional betters. Well-paid sinecures are also filled by ex-regular officers dug out of pensioned retirement.

Your anonymous correspondent will surely echo the hope expressed by those eminent Air Commodores, that he will remain out of a State Medical Service. Long may the public be spared the mockery of a whole-time salaried State Medical Service: but if this thing should come, then I venture to prophesy that the administrative lightweights, with their smattering of medical knowledge, will rise to the summit of the bureaucratic hierarchy; and the clinicians, who have perforce endured the brass-hatted administrators in time of war, will resume civilian life, only to be strangled by red tape.—I am, etc.,

TEMPORARY SERVING OFFICER.

Ultra-violet Light Treatment at Welfare Centres

SIR,—In the abridged notes of a lecture by Dr. Doyne Bell (July 29, p. 157) I fear a wrong impression may be implied of the use of ultra-violet rays in welfare practice. Dr. Doyne Bell condemns their use in the "prophylaxis of respiratory infection," whatever that may mean. Ultra-violet rays can be used in various other conditions in babies and young children with very satisfactory results, as I showed in an investigation carried out a number of years ago when I was M.O.H. at Middleton, Manchester. I go so far as to say that all child welfare centres should be equipped with U.V.R. lamps. When mothers generally report that their babies are sleeping better, thriving and putting on weight, and are more lively after a course of treatment, this is a sufficient guarantee of the usefulness of U.V.R. in clinic practice.—I am, etc.,

S. T. BEGGS.

Yeast in Furunculosis

SIR,—Among several present-day uses yeast still holds its own as an acknowledged remedy for boils and furuncles. In tablet form as the dried preparation it is of little or no use for the purpose; being, however, of substantial benefit if freshly skimmed from brewers' or distillers' wort and administered in its natural semi-fluid state, suitably suspended. This fresh yeast is exhibited in one-drachm doses in sweetened water thrice daily before meals. Or it may be given compressed as a bean-sized piece or as "yeast-cake" (1/4 to 1/2 oz. pro dos.), broken up and added to mineral water sweetened with sugar. Of the two, the semi-liquid yeast is the more active in therapy.

The pharmacological action of yeast was formerly believed due to its fermentative properties; but is it not more likely that its content of *Penicillium glaucum* contains the active chemotherapeutic principle that inhibits the *Staphylococcus aureus* and does the good? In view of the discovery that penicillin, prepared from the mould *Penicillium notatum*, is bacteriostatic to the *Staph. aureus* among other pyogenic organisms, does this not suggest an analogous action on the part of the *P. glaucum* of yeast? Here, perhaps, is a field for investigation. Yeast is given by mouth only, not by injection, nor is it applied locally. It is possible that microscopic doses of *P. glaucum*, or its extract contained therein, are sufficient therapeutically; and that if wholly or partially destroyed by the hydrochloric acid of the gastric juice the stuff might be more potent given after alkalizing this; or, for that matter, might be most effective in the absence of HCl as in achlorhydria, constitutional or other. These considerations may account for yeast being unequal in its results.

Beer wort, by the way, even at room temperature, is a simple, useful test-tube medium for cultivating moulds and fungi by surface smear.—I am, etc.,

Bournemouth. S. WATSON SMITH.

The Fly Menace

SIR,—I have just read Lieut.-Col. Gear's instructive paper (March 18, p. 383). He has pointed out how seriously the fly menace is viewed in the Army. He describes the work of a Fly Control Unit consisting of five officers, several N.C.O.s, 200 to 300 British other ranks, and African pioneers. Needless to say, these personnel would not have been released for these duties had the work of eliminating flies not been deemed of urgent priority.

My mind goes back to an article, about a month previously, by Dr. Shooter and Miss Waterworth (Feb. 19, p. 247). In it the following complacent statement occurs: "In September, 1942, when flies abounded in this hospital. . . ." I suggest that the fly problem be tackled at its source. This would eliminate the need for papers on the transmissibility of haemolytic streptococcal infections by flies in hospitals. Let hospital administrators at home learn a lesson from the Army, and in their planning really give due consideration to this undoubted menace.—I am, etc.,

P. JACOBS,
Capt., I.M.S.

Mr. Prynne's Habits

SIR,—In your issue of July 15 (p. 91) the note on Pepys and alcoholism contains the remark: "Total abstainers in those days were exceptional. Such a one was Mr. Prynne." This statement does not agree with Aubrey's famous description of Prynne at his studies: "He wore a long quilt cap, which came 2 or 3, at least, inches over his eies, which served him as an umbrella to defend his eies from the light. About every 3 houres his man was to bring him a roll and a pott of ale to refocillate his wasted spirits. So he studied and dranke and munched some bread: and this maintained him till night; and then he made a good supper." I suspect that Prynne's objection was to the practice of drinking toasts and not to the practice of drinking liquor.

The late Sir Henry Maxwell Lyte pointed out to me, when I drew his attention to this passage some twenty years ago, that the main purpose of Prynne's quilt cap was probably to conceal his mangled ears.—I am, etc.,

The University Library, Glasgow. W. R. CUNNINGHAM.

Representation on Council of R.C.S.

SIR,—It is with great pleasure that I read of the invitation from the Royal College of Surgeons to the Association to nominate general practitioners, one of whom should serve as a co-opted member of the College Council (*Supplement*, Aug. 5, p. 31). For 50 years the Society of Members R.C.S. has been trying to persuade the College Council to take such a step, as we have felt that the G.P.s should be represented on the Council, as they are by far the more numerous and contribute more to the College funds than any others.

There are many able men among the G.P.s who would be most worthy colleagues on the Council of the College, and would undoubtedly benefit that Council by knowledge they possess of "ordinary practice." This step on the part of the College is a welcome and graceful act.—I am, etc.,

PERCY B. SPURGIN,
President, Society of Members, R.C.S.

The Alvarenga Prize for 1944 has been awarded by the College of Physicians of Philadelphia to Dr. Gervase J. Connor, Department of Surgery, Yale University School of Medicine, New Haven, Connecticut, for a paper entitled "Anterior Cerebellar Function: An Analytical Study in Functional Localization in the Cerebellum in Dog and Monkey." This prize was established by the will of Pedro Francisco daCosta Alvarenga of Lisbon, Portugal, an Associate Fellow of the College of Physicians, "to be awarded annually by the College of Physicians on each anniversay of the death of the testator, July 14, 1883, to the author of the best memorial upon any branch of medicine which may be deemed worthy of the prize." Dr. Connor's paper will be published in the *Transactions and Studies of the College of Physicians*, December, 1944.

Obituary

ALEXANDER PRIMROSE, C.B., F.R.C.S.

We regret to announce the death, at the age of 82, of Alexander Primrose, formerly dean of the Faculty of Medicine of Toronto University. Primrose, who was born in Nova Scotia, studied medicine at Edinburgh, qualifying M.B., C.M. in 1886, and after a period at the Middlesex Hospital returned to Canada to practise in Toronto. In 1896 he was appointed professor of anatomy at Toronto, a post he held until 1907. Dr. Primrose went over-seas in 1915 as surgeon with No. 4 Canadian General Hospital, and later served in Salonika, returning to England in 1916 as consulting surgeon to the Canadian Forces. He was mentioned in dispatches, and in 1918 received the C.B. When he returned to Canada at the end of 1918 he was appointed professor of clinical surgery at Toronto. He held this post until 1931, and for a great part of that time (from 1920 to 1932) was also dean of the Faculty of Medicine. In 1925 he was made a Fellow of the Royal College of Surgeons, and among a number of offices he held were president of the Canadian Medical Association, of the American Surgical Association, and of the Toronto Medical Society.

Prof. GREY TURNER writes:

For many years Alexander Primrose was an outstanding figure in Canadian medical life, and especially in connexion with the University of Toronto, where he originally lectured in anatomy, and for years afterwards occupied the position of professor of clinical surgery and of dean. I remember so well the prominent part he played at the time of the meeting of the British Medical Association in that city in 1906. From then onwards he continued to be most active both in surgery and in university affairs. He was interested in the wider field of medicine and in medical education, and was always anxious to keep in touch with the work going on in what he always referred to as the old country, which he loved to visit whenever opportunity arose. It gave him immense pleasure to be elected a Fellow of the College of Surgeons as a member of twenty years' standing in 1925, and he was particularly proud to be asked to represent the College thereafter in connexion with functions in his own country. Primrose was accepted as an outstanding representative of Canadian surgery by American surgeons; he was an honorary Fellow of the American College and he had held high office in several of their societies. But though his professional work naturally slackened off very considerably in recent years, he contributed from his experience at the meetings of societies and to the journals, and he gave a very interesting address as president of the American Surgical Association in 1931. He was of a very kindly disposition and always anxious to be helpful, and his wide knowledge of men and affairs encouraged application to him for guidance. Primrose was the sort of man to whom colleagues naturally turned for advice, and he seemed especially cut out for the position of doyen, a seniority which he occupied gracefully for several years.

By the death on July 10 of Dr. A. E. KIDD, of Dundee, the Scottish School Medical Service has lost one of its pioneers. Alexander Edward Kidd studied medicine at Dundee, at Edinburgh University, and at University College, London, graduating M.B., C.M. at Edinburgh in 1894. In 1901 he also took his D.P.H. at St. Andrews University. "J. H." writes: Dr. Kidd had many interests, but the main one was his life-work—the health and well-being of the youngsters of Dundee. For over a quarter of a century he was in charge of pre-school and school medical administration in Dundee. As a member of the Territorial Army he saw service in the last war, and was in command of stationary and general hospitals in Serbia after being in France with the 3rd Highland Field Ambulance of the famous 51st Division. His work was recognized and honoured by the British, Greek, and Serbian Governments. He received the O.B.E. and was mentioned five times in dispatches. Dr. Kidd retired from the School Medical Service in 1937 on attaining the age limit, but on the outbreak of war he took charge of Civil Defence casualty work and first-aid posts in Dundee. This post he held until failing health compelled him to give it up. In recognition of his services in the city he was made a Deputy Lieutenant in 1943—an honour which was well deserved and which he thoroughly appreciated. He was one of the founder members of the Association of School Medical Officers of Scotland. Indeed, if my memory is correct, he was its first honorary secretary. In due course he became president, and his period of office culminated in a successful conference in Edinburgh in the early 'twenties. It was during this time that my friendship with him deepened and I learned to appreciate in proper degree his sound professional knowledge, his powers of organization, and his downright common sense. He was a most delightful companion to adults and children alike. He would have celebrated his jubilee in medicine if he had survived until Aug. 1: it was on that date in 1894 that he was "capped" at Edinburgh University. He leaves behind among his colleagues very happy and unfading memories.

Medical Notes in Parliament

Distribution and Use of Penicillin

In an answer, on Aug. 3, to Mr. Linstead Mr. WILLINK said that up to the present all official supplies of penicillin, apart from a small quantity used for clinical trials, had been reserved for the Services and air-raid casualties. Production was, however, increasing to such an extent that it would shortly be possible to make some penicillin available for general civilian use. It was expected that some time next year the supplies would be sufficient to meet all requirements. During the transitional period it was essential to restrict the use of penicillin to cases in which it was likely to save life or to be the only available means of effecting recovery from grave illness. It had been arranged to issue the available supplies to university medical schools for use in their teaching hospitals and other hospitals approved by them in their areas. For the time being the issue would be made free of charge. The conditions for which penicillin should be used would be indicated in an official memorandum. Suitable cases would be admitted to the hospitals concerned. It would not be possible at present to make penicillin available to private practitioners.

Preparation of penicillin required the highest possible technical control to prevent the marketing of inferior and possibly dangerous preparations. For the present all supplies were obtained from the Ministry of Supply, who satisfied themselves through their staff of competent inspectors as to the quality of the penicillin before issue. Regulations had also been prepared for prohibiting the manufacture of penicillin for sale except in accordance with a licence issued under the Therapeutic Substances Act, and in conformity with prescribed conditions, including tests for strength, quality, and purity.

Ministry of Health's Social Survey

Brig.-Gen. CLIFTON BROWN on Aug. 3 asked Mr. Willink why inquiries had been made of people living in the Hungerford district about their health and past illnesses without consulting their local doctor who attended them. He asked whether the Minister would stop these proceedings in future. Mr. WILLINK said the visitor was a representative of the War-time Social Survey of the Ministry of Information, which since January had been carrying out, on behalf of his Department, a sampling inquiry in England and Wales. The object was to assess the amount of ill-health, including minor illness, which did not necessarily come under treatment by a doctor and was not otherwise recorded. This survey was providing information essential to a proper understanding of health statistics which could not be attained in any other way. He would not agree to stop the survey, but any information given by people in response to it was entirely voluntary. Experience had shown that practically everyone approached had been very willing to be helpful.

On the same day Sir E. GRAHAM-LITTLE asked a similar question and was referred to the above reply.

Evacuation: Position of Invalids

Mr. WILLINK, answering Mr. Pritt on Aug. 3, said arrangements were proceeding for the removal from danger areas of a number of permanent invalids already in institutional accommodation. For other infirm and invalid persons the Government Evacuation Scheme provided for the issue of travel warrants and billeting certificates if they could arrange for their own accommodation in safer areas. With the resources available he could not hold out hope that it would be possible to undertake the organized evacuation of all permanent invalids from areas at present subject to bombing.

Jamaican Medical Service

Ten doctors, Col. STANLEY stated on Aug. 2, have resigned from the Jamaican Medical Service during the last three years. One of these doctors resigned when on leave in the United Kingdom, where her husband was posted on military duty; one returned to the United States, of which he was a citizen; one, a Dutch refugee, proceeded to Curaçao at the request of the Netherlands Government; one resigned without giving any reason; and one has since rejoined the medical service. In general, said Col. Stanley, the reasons put forward for resignation were inadequate travelling and subsistence allowances, differences with the senior medical officer, protests against transfers, and lack of time for private practice. The salaries of medical officers were substantially increased as from April 1, 1943. Newly appointed officers who previously received a fixed salary of £400 per annum now get £500 per annum, rising to £600 per annum plus a sum of £300 per annum in lieu of private practice where that is not available or permitted.

The Government's New Houses

In the House of Commons on Aug. 1 Mr. WILLINK moved the second reading of the Housing (Temporary Accommodation) Bill. He referred to the urgent need to provide family housing during the period at the end of the war before permanent houses could be provided, and said that this consideration pointed to a type of building capable of production away from the site—a type of building, so far as possible, factory-made. A scheme was required to meet urgent needs as quickly as possible, and that pointed to standardization. A start would be made in time of war, and there was reason to think that something of the order of 100,000 of these houses—or bungalows, as he preferred to call them—could be produced within one year of going into production. Economy of labour, material, and time could be achieved by accepting some reduction in normal standards, and primarily in the standard of total size. Under most building by-laws, the normal minimum height of rooms was 8 ft., and the height of the rooms in the bungalow would be 7 ft. 6 in. The ventilation would be so arranged, however, that there would be no ground for anxiety and there would be an economy of material.

The actual area of the bungalow, excluding the detached outdoor shed, would be 616 sq. ft. compared with the range of 800 to 900 sq. ft. contemplated for the normal permanent family house. There would be no staircase, and there would be two bedrooms instead of three. There would be a living room, kitchen, two bedrooms, bathroom, separate w.c., and a detached outdoor shed. The Minister of Works had obtained a wealth of advice on this matter. He had used the full resources of the Department of Scientific and Industrial Research, and had even consulted the Medical Research Council. The materials and method of construction had been very carefully considered. Heat and cold, condensation, noise, liability to wear and tear, and cost of upkeep had been considered, and it was intended to produce a simple manual for tenants to help them in management and upkeep. This bungalow was probably more scientifically correct than any house had ever been. He could only hope it would be correspondingly comfortable. Special attention had been given to cupboard space, and there would be a refrigerator in the kitchen. It was estimated that the cost would be about £600 a bungalow, including transport and erection. The Government was considering more than one type of these bungalows.

Miss LLOYD GEORGE said that the new bungalows were meant for small families, but she hoped the families would not remain small. What, she asked, was to happen as the families grew? Mr. SILKIN said that these houses would not stand up to rough weather: a height of 7 ft. 6 in. was all right in the country, but in towns it was bad. In London the minimum height was 8 ft. 6 in. There was also a real danger of warping with steel houses. There was grave danger of vermin in London and many other large towns. He was advised on high authority that these houses were peculiarly susceptible to vermin. Mr. WILLINK said it was to that matter that he had referred, more delicately, when he mentioned consultation with the Medical Research Council.

The debate was adjourned.

Diseases Attributable to War Service

During a debate on pensions and grants on Aug. 3 Mr. DOUGLAS directed attention to the refusals of pensions in the case of men who had suffered from certain constitutional diseases or from diseases of which the cause was unknown. He asserted that there was a policy of excluding completely categories of cases and refusing to give them the benefits which the Royal Warrant provided. The Ministry threw back on the claimant the onus of proof which the Royal Warrant was intended to remove. An amendment made to the Warrant on Oct. 4, 1943, had provided that where the injury or disease which led to discharge or death was not noted in the medical reports made on the commencement of war service, a certificate should be given as a matter of right unless the evidence showed that the conditions were not complied with: It further provided that the benefit of any doubt should go to the claimant. The Ministry had ignored these provisions and had said there was a short list of diseases which could not be attributed to war service. He (Mr. Douglas) asked Sir Walter Womersley to recognize that a consensus of medical opinion was not evidence and that it was not permissible to interpret the Royal Warrant by reference to statements by somebody, however eminent. The Ministry must interpret the Warrant by what was contained in it.

Sir WALTER WOMERSLEY replied that he was fortified by the best legal opinion. The Ministry did not "turn down" every case of a disease which the consensus of medical opinion had declared was not due to war service. Account was taken of aggravation by wrong diagnosis or by wrong treatment in hospital. The Ministry was guided by medical opinion on the diseases which could not be attributed to war service. The entitlement practice was based on the advice of experts nominated by the Royal Colleges of Physicians and Surgeons and the Medical Research Council. This procedure had been followed during the war and extended by the holding of conferences with eminent specialists on new problems as they arose. Cancer was one disease scheduled by consensus of medical opinion as not due to the war. Men whose disability was not due to war service or aggravated thereby came under the ordinary social services and got as good treatment as did the ordinary civilian.

Skin Sores following Malarial Therapy.—Replying on Aug. 1 to Mr. Robertson, Sir JAMES GRIGG said Army medical authorities were familiar with the cases of soldiers in India who, after prolonged malarial preventive treatment with quinine, mepacrine, and other drugs, with the effect of the climate and insect pests, developed skin sores. Arrangements existed for treating these cases in India and also for transferring from India such men as became medically unfit to serve there. Most of the men who had done five years' service over-seas had by now left for the United Kingdom.

Notes in Brief

Giving on Aug. 1 instances of German looting and vandalism in Italy, Sir JAMES GRIGG recorded that the Germans took the entire library of medical books from the Biblioteca Communale at Vasto.

In his survey of the war situation, which Mr. Churchill made on Aug. 2, he said the efficiency of the hospitals with our large armies in many varied theatres reflected high credit upon the War Office.

Forty-one cases of smallpox, two fatal, have been reported among British troops in India since the first landing.

Medical News

Mr. Gordon Harker, the actor, will broadcast an appeal for the Royal Westminster Ophthalmic Hospital, High Holborn, in "The Week's Good Cause" on Sunday, Aug. 20.

The allowance of dried bananas to children with steatorrhoea (including cases of coeliac disease while they have steatorrhoea) will in future be 7 lb. a month instead of 14 lb. Applications, accompanied by a detailed medical certificate, should be made to the local Food Office in the usual way.

The prize distribution and conversazione of the Royal Dental Hospital will be held at the hospital, 32, Leicester Square, W.C.2, on Oct. 7 at 3 p.m., when Sir Alfred Webb-Johnson will preside. Past students are asked to accept this as an invitation to attend.

The telephone number of the National Hospital for Nervous Diseases, Queen Square, London, W.C.1, has been changed to Terminus 7721 (7 lines).

The Trustees of the Leverhulme Research Fellowships have approved the award of a grant to A. J. Lea, M.B., Ch.B., for research on the association of colour with other characters. Application forms and further information about the Fellowships may be obtained from the Secretary, Leverhulme Research Fellowships, Unilever House, Blackfriars, E.C.4.

The Professional Classes Aid Council (20, Campden Hill Square, London, W.8) exists for the relief of distress among the professional classes and others considered suitable. Lord Dawson of Penn is a patron, and among the bodies represented on the council are the Royal College of Physicians, the British Medical Association, and the Royal Medical Benevolent Fund. The annual report for 1943–4 briefly recounts what the Council has done during the year and includes a financial statement.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week notifications of acute pneumonia were 76 higher than last week, and those of scarlet fever 61 higher, but measles notifications fell by 49.

The rise in scarlet fever notifications was due mainly to an increase of 59 in Yorks West Riding, and of 24 in Glamorganshire. Lancashire showed a rise of 47 in the incidence of acute pneumonia, and Sussex recorded 39 more cases of whooping-cough than last week. The largest decreases in the notifications of measles were in Lancashire and Northumberland with 68 and 42 cases respectively fewer than last week; in Devonshire notifications went up by 31, and in Dorsetshire by 29.

Notifications of dysentery, 149 in all, were 2 fewer than last week. The largest returns were Lancashire 22, Dorsetshire 17, Essex 16, London 15, Yorks West Riding 10.

In *Scotland* notifications of diphtheria fell by 21, and of scarlet fever by 31. The 86 cases of dysentery were 5 fewer than last week's total; the highest returns were Edinburgh 36, Glasgow 17, and Lanark County 18.

In *Eire* the incidence of measles fell by 49. Over half of the total notifications were from two areas: Clare, Ennis U.D. 32, and Roscommon, Roscommon R.D. 20. The notifications of diphtheria remained at the relatively high level of the preceding fortnight.

Tuberculosis in Wales

At the annual meeting of the Welsh National Memorial Association it was stated that the tuberculosis death rate in Wales was lower than in any pre-war year. 890 patients were awaiting admission to hospital—the highest number in the association's history.

Quarterly Returns for England and Wales

In the first quarter of 1944 the birth rate was 17.9 per 1,000, the highest rate for a March quarter since 1926. In the first quarter of 1943 the birth rate was 16.9, and the average for the five preceding first quarters was 15.0. Infant mortality was 58 per 1,000 live births, and 14 below the average of the ten preceding first quarters. The general death rate was 14.2 per 1,000, compared with 13.5 for the first quarter of 1943 and the average rate of 16.2 for the five March quarters before 1943. The marriage rate of 12.1 per 1,000 was the lowest rate for a first quarter since 1939.

The deaths in England and Wales for 1943 show that diphtheria mortality was the lowest on record. There were 1,368 deaths from this disease, compared with 1,827 in 1942 and 2,641 in 1941. Deaths from respiratory tuberculosis increased by 552 for males, but decreased by 202 for females.

Quarterly Returns for Northern Ireland

The birth rate during the March quarter was 23.3 per 1,000, which is 2.6 above the average of the five preceding first quarters. Infant mortality was 85 per 1,000 registered births, 10 below the five-years average. The general death rate was 15.6, compared with 17.4 for the average of the five preceding March quarters. Deaths from pulmonary tuberculosis numbered 233, and from other forms of tuberculosis 80, the former being 40 below and the latter 5 above the five-years average. Deaths from whooping-cough and infantile diarrhoea were 6 and 23 above the average, while deaths from influenza were 92 below. Diphtheria accounted for 26, the same as the five-years average.

Registrar-General's Annual Report for Northern Ireland, 1940

The births registered during the year were equivalent to a rate of 19.6 per 1,000. The infant mortality was 86 per 1,000 registered births, 16 higher than in 1939. The maternal mortality rate was 4.22 per 1,000 births, an increase of 0.42 on the rate for the preceding year. A general death rate of 14.6 per 1,000 was 1.1 above that for 1939. The downward trend of tuberculosis mortality was arrested by a rise of 14 to 98 per 100,000. Deaths from cerebrospinal fever increased from 17 in 1939 to 58 in 1940. Diarrhoea under 2 years of age was responsible for 387 deaths, 110 more than in 1939.

Week Ending August 5

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,410, whooping-cough 1,768, diphtheria 471, measles 2,154, acute pneumonia 376, dysentery 139, paratyphoid 7, typhoid 15.

No. 30

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 29.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	43	3	22	2	2	47	4	13	1	3
Deaths	—	—	—			—	1	1		
Diphtheria	461	20	111	76	18	609	40	127	66	40
Deaths	6	1	2	2	1	6	1	—	—	—
Dysentery	149	15	86	—	1	99	13	160	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	1	1	—	1	—	1	1	—
Deaths		—					—			
Erysipelas			28	18	—			29	4	3
Deaths		1					—			
Infective enteritis or diarrhoea under 2 years				31					36	
Deaths	49	9	11	12	1	61	11	12	14	7
Measles*	2,352	73	61	86	22	2,262	143	35	20	3
Deaths	2	—	1	—	—	2	—	—	—	—
Ophthalmia neonatorum	61	6	21	—	1	78	7	22	—	—
Deaths										
Paratyphoid fever	11	—	1 (B)	1 (B)	—	10	2	1	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	450	17	2	4	5	432	24	12	—	3
Deaths (from influenza)	3	—	—	—	—	9	1	1	—	—
Pneumonia, primary			149	6				135	19	
Deaths		26		10	2		23		5	7
Polio-encephalitis, acute	—	—				1	1			
Deaths		—					—			
Poliomyelitis, acute	12	1	5	2	—	11	1	—	4	—
Deaths		—					1			
Puerperal fever		7	10		—		3	16	—	—
Deaths										
Puerperal pyrexia‡	147	6	9	2	1	163	10	13	—	—
Deaths		1					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,530	38	147	40	36	1,979	193	170	44	39
Deaths	—	—	—	—	—	1	—	1	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	18	1	2	14	3	13	1	3	9	6
Deaths	1	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,151	129	53	55	9	1,896	95	56	36	38
Deaths	14	3	1	2	1	10	—	4	—	1
Deaths (0–1 year)	513	55	62	44	17	350	34	68	25	29
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,190	707	562	204	102	4,100	591	544	143	101
Annual death rate (per 1,000 persons living)			12·9	13·2	§			12·3	9·4	§
Live births	7,089	695	957	419	312	6,559	759	940	322	264
Annual rate per 1,000 persons living			19·5	27·2	§			19·2	21·2	§
Stillbirths	217	14	34			255	26	35		
Rate per 1,000 total births (including stillborn)			34					36		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

The Services

Col. N. Cantlie, M.C., late R.A.M.C., has been appointed D.D.M.S. of a Command, and has been granted the acting rank of Major-Gen.

Air Cdre. T. C. St. C. Morton, O.B.E., has been appointed an Honorary Physician to the King in succession to Air Cdre. H. L. Burton, who has vacated the appointment on retirement from the R.A.F.

Capt. C. Sonick, I.A.M.S., has been awarded the M.C. in recognition of gallant and distinguished services in Italy, and Capt. A. G. Hewer, R.A.M.C., in recognition of gallant and distinguished services in the field.

Temp. Surg. Lieut. A. H. Zuckerman, R.N.V.R., has been commended for skill and endurance in services to injured survivors when a merchant ship was wrecked on a desolate part of the coast of Scotland.

CASUALTIES IN THE MEDICAL SERVICES

Wounded.—War Subs. Capts. G. M. Clark, A. B. Hill, G. C. Kennedy, S. M. G. McGuffie, D. W. Moynagh, A. G. Richards, D. N. Thornton, E. N. Whitley, R.A.M.C.

Killed in action in Normandy.—Capts. C. R. Veall and A. D. Fisk, R.A.M.C.

Reported missing at sea, now presumed killed in action.—Major E. B. Rotherham, R.A.M.C.

Missing, believed prisoner of war.—Major J. S. Darling, R.A.M.C.

Killed accidentally while on duty.—Capt. S. Conway, R.A.M.C.

Died.—Major C. F. Rainer, R.A.M.C.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on July 29 the following degrees were conferred:

B.M., B.CH.—J. C. Chartres, [1]F. R. M. Elgood, [1]H. C. Nohl, [1]Nancy D. Cox.
[1] *In absentia.*

UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated:

M.D.—Branch I (*Medicine*): G. D. Daruvala, P. Forgacs, J. W. Paulley. Branch III (*Psychological Medicine*): W. E. W. Bridger. Branch VI (*Tropical Medicine*): A. C. Howard.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At an ordinary meeting of the Council held on Aug. 3, with Sir Alfred Webb-Johnson, President, in the chair, it was decided to invite the following representatives of the branches of practice indicated to attend meetings of the Council during the ensuing collegiate year:

Dr. H. Guy Dain (general practice), Mr. V. E. Negus (otolaryngology), Dr. A. D. Marston (anaesthetics), Mr. George Black (ophthalmology), Mr. G. F. Stebbing (radiology), Prof. R. V. Bradlaw (dental surgery).

It was decided to recognize the posts of fourth house-surgeon at the East Suffolk and Ipswich Hospital and of resident surgical officer and casualty officer at the City General Hospital, Leicester, for the six-months surgical practice required of candidates for the Final Fellowship examination. Sir Frank Colyer was reappointed Honorary Curator of the Odontological Collection of the Museum for a further year. Mr. H. S. Souttar was appointed the representative of the College on the Scientific Advisory Committee of the Radium Institute and Mount Vernon Hospital.

Diplomas

Diplomas of Membership were granted, jointly with the Royal College of Physicians of London, to the candidates whose names appear in the report of the meeting of the Royal College of Physicians of London in the *Journal* of Aug. 12 (p. 227). Diplomas were granted, jointly with the Royal College of Physicians of London, as follows:

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.—J. A. Chivers, Philomena M. Guinan, W. Harris, H. G. W. Hoare, M. Klein, L. Lurie, S. J. H. Miller, M. C. Mundle, V. G. Patel, E. C. Richardson, R. H. Rushton, W. Shortis, G. L. Simmons, R. Spink, Mabel E. Stewart, G. F. Wright.

DIPLOMA IN MEDICAL RADIOLOGY.—K. E. Barlow, R. J. Carr, F. H. Cross, Kathleen M. Packett, G. Steiner.

DIPLOMA IN PHYSICAL MEDICINE.—F. S. Cooksey.

Before the meeting of the Council the Blane Medal was presented by Surg. Vice-Admiral Sir Sheldon Dudley, Medical Director-General of the Royal Navy, to Surg. Cmdr. W. A. Hopkins, O.B.E., M.D., R.N., in the presence of Lord Moran, President of the Royal College of Physicians, and the President and Council of the Royal College of Surgeons.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, W.C.1 (hours 9 a.m. to 5 p.m.). TELEPHONE: EUSTON 2111. TELEGRAMS: *Articulate Westcent, London.*

MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association. TELEPHONE: EUSTON 2111. TELEGRAMS: *Medisecra Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Injections for Arthritis

Q.—*Can you give me any information about the injection of solutions into painful joints for the relief of arthritis?*

A.—An article recently appeared (*Lancet*, 1944, **1**, 563) on the injection of joints in rheumatoid arthritis with acid potassium phosphate, good results being claimed in a large series of cases. The method must, nevertheless, be considered to be in the experimental stage, and further controlled observations will be required before it can be regarded as a safe and effective method of treatment. It would seem desirable at the present stage that it should be tried only in hospital, where rigid antisepsis and careful nursing and observation would be possible.

Chloride Content of Blood in Drowning

Q.—*In cases of drowning, what is the medico-legal significance of alterations in the chloride content of blood and pleural fluid?*

A.—In cases of drowning water tends to enter the respiratory tract just before death, and it has been found that if drowning takes place in fresh water there is a tendency for the percentage of chlorides to be lowered in the blood generally, and, further, the percentage in the left heart is lower than that in the right heart. When drowning takes place in salt water there is a tendency to increase the chloride of the blood generally, and in particular the blood in the left heart has a higher content than the blood in the right. After drowning in sea water the magnesium is increased in the blood generally, and the amount in the left heart is greater than that in the right. Examination of the blood for chlorides and magnesium, in both sides of the heart, is therefore helpful in arriving at an opinion as to whether in a body found in water death was actually due to drowning. These changes are most significant in bodies recovered before putrefaction is advanced. It is obvious that these changes will depend upon the rapidity of death after submersion, and particularly upon the length of time the circulation continues after water has been admitted to the lungs—that is, after consciousness has been lost. Obviously the greater length of time between the one phenomenon and the other, the more equal would be the dispersion of chlorides between the two sides of the heart.

"Safe" Period

Q.—*A healthy young woman has borne three children in 5 years. Before marriage menstruation occurred regularly every 30–31 days. Menstruation began again 6 weeks after each confinement and now occurs at intervals of 36 to 42 days. Is it possible (a) to restore previous regularity—e.g., by the use of stilboestrol or prostigmin, and (b) to advise on a "safe period," however short? The patient's sister, whose periods have always occurred regularly every 21 days, has also sought advice on a "safe period." Would the regular reading of the vaginal temperature before rising provide a useful indication of the date of ovulation in either case, and, if so, could that date be related to a possible "safe period"? Both patients are intelligent women and decline contraceptives on ethical grounds.*

A.—Some alteration in the menstrual cycle after pregnancy is not uncommon, and unless there is other evidence of endocrine disturbance, such as gross alteration in weight, spontaneous correction of the rhythm is to be expected. Neither stilboestrol nor prostigmin is indicated, and although thyroid, gr. 1/2 to 1 each night regularly for two to three months, appears to help to regulate the cycle at times, there is much to be said for adopting an expectant attitude in this case.

Ovulation occurs approximately 14 days *before* the onset of the next menses, so in a 21-day cycle it is soon after the last period ceases. The only reasonably "safe period" is therefore the 7–10 days preceding menstruation. With a cycle so irregular, as in the first case, it is difficult to predict the time of ovulation, especially

as there is a possibility of spontaneous alteration at any time. With the exception, perhaps, of the two or three days immediately after menstruation I should therefore hesitate to advise any time as being "safe."

Observations on temperature changes during the menstrual cycle have mostly been based on rectal recordings, but the vaginal temperature probably tallies closely. There is a general agreement that the highest temperatures are registered during the premenstrual phase, with a fall at the onset of the flow. It has also been claimed that on the day of ovulation there is a fall in temperature (Zuck, T. T., *Amer. J. Obstet. Gynec.*, 1938, **36**, 998), but this is not confirmed by all workers. In any case the range of variation is so small and observations need to be so accurate and carefully controlled that this cannot be recommended as a practical means of assessing the time of ovulation. Both patients, however, if observant, might be able to get some indication by watching for slight lower abdominal discomfort and for mucoid vaginal discharge, sometimes blood-stained, either of which may appear for one to three days round about the time of ovulation.

Function of Spleen

Q.—*Apart from its activity in blood formation and destruction, what is the function of the spleen? Is there any evidence of an internal secretion; and could you recommend a recent monograph on the spleen in particular or the reticulo-endothelial system in general?*

A.—The spleen acts as a reservoir for blood, though the significance of this function varies in different species and is probably minimal in man. The spleen also plays an important part in infection and immunity. This is very prettily shown in the rat, which frequently has a latent Bartonella infection but is liable to succumb to the infection if the spleen is removed. There is some relation between the lymphatic tissue of the spleen and the absorption of protein. Extracts of the spleen have been said to reduce the platelet count and the red cells, and they have been used for the latter purpose in polycythaemia, but the effects have not been generally confirmed. Spleen has also been used as a treatment for tuberculosis. It is doubtful whether the spleen has an internal secretion in the ordinary sense of the term. Most of the functions of the spleen can apparently be taken over by other tissues, but the red cells show abnormal nuclear remnants or Howell-Jolly bodies indefinitely after splenectomy. Recent monographs on the spleen are *Physiologie der Milz*, by E. Lauda, Berlin (1933); and *The Spleen and Resistance*, by E. Perla and J. Marmorston, Baltimore and London (1936); the latter is probably the most suitable book for the present inquirer. Two attractive French books, both published by Masson of Paris, are *La Rate, Organe Reservoir*, by Léon Binet (1930), and *L'Exploration Fonctionnelle de la Rate*, by Ed. Benhamou (1933); neither, however, deals at length with questions of an internal secretion or immunity. The best recent account of the reticulo-endothelial system is probably the 300-page review by R. H. Jaffé in Hal Downey's *Handbook of Haematology*, vol. II, London, 1938.

Isolation of Scarlet Fever

Q.—*What is considered the minimum quarantine for uncomplicated cases of mild scarlet fever treated with serum?*

A.—The inquirer doubtless means minimum period of isolation. Current practice in fever hospitals is to release adults towards the end of the third week and children during the fourth week from the onset. It is known that about 50% of patients harbour haemolytic streptococci in varying numbers on release from hospital, but only some 1% to 4% (the higher rates in the winter months) give rise to new ("return") cases. Patients nursed singly can usually be discharged somewhat earlier because reinfection does not occur, as it frequently does in a hospital ward accommodating 20 patients mingling more or less freely when convalescent. If two negative consecutive swabs are obtained the patient may be released still earlier, the nose and nasopharynx being examined as well as the fauces or tonsils. There is available neither a simple test to determine virulence of the streptococcus nor a reliable criterion to determine how many organisms are likely to lead to infection.

Muscular Twitching before Sleep

Q.—*A man of 35 states that shortly before going to sleep his body gives a violent convulsive movement. This is frequently repeated and occasionally occurs during his sleep. He is a normal, healthy man, mentally stable, and free from any evidence of organic nervous disease. I have heard of, and experienced, mild and sometimes generalized muscular twitchings when the body is relaxing, but I have never come across a case where they are so regular, persistent, and violent. Are any further investigations indicated?*

A.—A solitary muscle twitching of an involuntary nature which occurs as a person is going off to sleep is quite normal. Its frequency and the number of muscles involved vary greatly from person to person. Everyone has experienced a sudden, quick jerk of the leg or arm, and the usual story is that this occurs in any limb a few times a year. It has been observed that people who have very frequent twitching of this sort are more often subject to epileptic fits than are others, but this does not mean that this particular patient either is epileptic or is going to develop fits. It might be interesting, however, to inquire whether he has epilepsy in his family.

Non-tropical Elephantiasis

Q.—*A middle-aged woman has severe non-tropical elephantiasis. Is there any operation which would offer a possibility of relief or cure?*

A.—It is assumed that the condition affects one leg, and that there is no discoverable vascular obstruction in the groin, pelvis, or abdomen. In such circumstances it may be possible in a favourable case to place a full-thickness (pedicle) skin graft with its lymphatics as a bridge between the "oedematous" thigh and the normal abdominal skin. The graft should be placed so that the lymph stream through it may flow in the same direction as it followed when the skin was in its original position. When this method cannot be adopted, the alternative is to excise the thickened subcutaneous tissue with broad longitudinal strips of the deep fascia; and then either to trim the skin so that when it is sutured it fits tightly over the exposed muscles, or to remove the skin completely and make good the defect with split skin grafts placed directly on the muscle or fascia. This procedure must be carried out in multiple stages, one side of the limb being done at a time. Should this fail, amputation may be inevitable.

After-treatment of Acute Nephritis

Q.—*Two children (5 and 6) had a sharp attack three months ago, and now, although the blood pressure and blood chemistry are back to normal, each continues to pass albumin in the urine, varying from a faint trace to 1 part per 1,000 (Esbach). They are kept in bed, and most textbooks agree that bed-rest is advisable until there is no further reduction of albuminuria. However, no definite progress is being shown, as on some days the protein cloud is as heavy as it was two months ago. Is the object of bed-rest merely to avoid draughts, and if so, are not the risks of a chill less in a well-clothed child up and about than in one who, feeling perfectly fit, is constantly in and out of bed, dressed only in a flannel bed-jacket, despite all the efforts of the nursing staff to keep him in bed?*

A.—Assuming that by "a sharp attack of acute nephritis" the questioner means nephritis of abrupt onset associated with haematuria (Type 1 nephritis), often a sequel of tonsillitis, two points should decide whether further bed-rest is necessary or not. A urine deposit should be examined for red blood cells. If no more than a few are seen, the patient should be allowed up and the ultimate prognosis should be good. Secondly, the presence of orthostatic albuminuria should be excluded. This can be done by examining the early morning specimen of urine. Specimens passed later in the day may contain additional "orthostatic albumin" if the child has been sitting up, and more so if walking about, the maximum amount occurring after 2 to 3 hours. Therefore, if there is no excess of red blood cells in the urine deposit, and if the early morning specimens contain no more than a faint trace of albumin—the other clinical features being as described—complete recovery is to be expected and the patient should be allowed up. Convalescence should be managed in the usual way.

Toxaemia persisting after Parturition

Q.—*In most cases of toxaemia of pregnancy the condition clears up after parturition. What is the correct treatment for those cases where the blood-pressure reading remains abnormally high and a variable degree of albuminuria persists? In the type I have in mind there are no casts or blood cells in the urine, and primigravidae can behave so as well as multiparae.*

A.—The persistence of an abnormally high blood-pressure reading is common after a toxaemic pregnancy. Prof. Browne and Miss Dodds (*J. Obstet. Gynaec. Brit. Emp.*, 1939, **46**, 443) found a persistent hypertension in about 40% of patients who had suffered from pre-eclamptic toxaemia. Recent work by Theobald, and in the United States, suggests that this hypertension is probably not caused by the toxaemia, but that such patients are potential hypertensives and that their blood pressure would rise with age even if they had never been pregnant. The American workers claim to have shown that hypertension is an extremely common condition and that, in fact, 40% of adults are actually or potentially hypertensive. Hypertension following a toxaemic pregnancy does not call for any treatment and is important mainly for its possible effect on subsequent pregnancies, since Prof. Browne and Miss Dodds (*J. Obstet. Gynaec. Brit. Emp.*, 1942, **49**, 1) have also shown that in cases where the blood pressure exceeds 150/100 before pregnancy, or in the first 20 weeks, in only 30% does the foetus survive.

It is known that albuminuria may take a long time to clear up. A case has been recorded where albuminuria persisted for two years

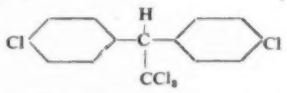
after confinement and then cleared up completely. No treatment is required.

The persistence of hypertension and albuminuria together for a long time after childbirth is suggestive of either chronic nephritis or malignant hypertension, though neither of these is likely in the absence of casts. In such cases, however, examination of the fundus oculi and renal function tests should be carried out.

D.D.T.

Q.—*I understand the powder used so successfully in Naples to rid both persons and rooms of lice is known as D.D.T., which chemically is dichlor-diphenyl-trichlorethane. What is the graphic formula for this?*

A.—The formula is:



The drug is used diluted with an inert carrier, not "neat."

An account of D.D.T. was given in a leading article in last week's *Journal*.

INCOME TAX

P.A.Y.E. on Fees for Unaccompanied Evacuated Children

"S." writes: An inspector of taxes claims that, as regards an M.O.H. not in private practice, these fees cannot be treated as part of general earnings assessable under Schedule D, and consequently tax should be deducted under "pay as you earn."

*** For tax to be so deductible the earnings must be emoluments assessable under Schedule E—i.e., derived from holding an office or employment of profit. As we understand the position doctors undertaking this work are not *employed* by the local Medical War Committee Bureau—i.e., the relationship of master and servant is not created by the arrangements made—and if so the fees are assessable not under Schedule E but under Schedule D, as professional profits. It is suggested that this view be put to the inspector of taxes concerned.

Retirement

R. C. inquires: "Supposing I retire at the end of next March, when do I pay my last instalment of income tax on my practice?"

*** The last year of assessment will be that ending April 5, 1945, the tax payable being due in two instalments on Jan. 1 and July 1, 1945. If, however, "cessation" is claimed, the last year is liable to be assessed on the basis of the earnings of the current year, in which case some supplementary amount of tax may become payable later.

Hospital Appointment: "Living Out"

"M. X." was recently living in at a hospital but now lives out and receives £150 in lieu. Is tax payable on this £150?

*** Yes. Employees living in are in favourable circumstances as regards income tax, and no special concession is made when those circumstances cease to operate.

"Pay as you Earn": Wife's Earnings

P. A.'s wife does part-time locum work, but does not earn more than £80 a year. Tax is being deducted from her earnings.

*** As a married woman Mrs. A. is entitled to the special allowance of £80 a year, so that she should not be liable to tax at all taking the year as a whole. It may be, however, that her earnings since April 5 last have exceeded the proportion of the annual £80, in which case some tax would be deducted; but that can be rectified during her next period of locum work. We suggest that P. A. ask the inspector of taxes to confirm that Mrs. A.'s code provides for allowance of the £80 to which she is entitled, and, assuming that to be the case, should then await rectification of the matter on the next occasion that Mrs. A. acts as locumtenent at the institution in question.

"Pay as you Earn": Locumtenent

W. B. inquires whether the fact that he still does some work in connexion with a former practice (which he did not sell) affects the basis of calculating his liability as an "indefinite locum."

*** In law clearly "no." As a matter of convenience relatively small Schedule E earnings—e.g., those received as a visiting hospital physician—are frequentlly omitted from the Schedule E assessments and regarded as outside "pay as you earn" where they can be looked upon as being by-products of a general practice. But the facts in this case are otherwise. W. B.'s employment is the main source of his earnings at present, and "pay as you earn" properly applies.

LETTERS, NOTES, ETC.

Oedema of Ankles in Hot Climate

Dr. JOHN G. MUNRO writes: Dr. Watson Newton's letter on the above subject (Jan. 1, p. 32) prompts me to quote an experience I had of similar cases on a troopship some months ago. The first cases occurred on the second day in the Red Sea. There was a sharp rise in incidence for the next four days, then a gradual decrease, and for the last few days of the voyage only two cases were recorded. Just over 1% of the troops were affected. There were no instances of the complaints among the ship's company or permanent staff. The history in each case was fairly constant—the gradual onset of swelling of both ankles, begun usually on the medial side just below the malleoli and accompanied by tiredness of the feet and by aching or stiffness in and around the ankle. There was no history of trauma that the patient was aware of. Clinically all degrees of oedema were noted, from slight puffiness to an extensive swelling which obliterated the normal contour of the ankle, extending on to the dorsum of the foot and 1 to 3 in. into the leg. In these latter cases there was obvious pitting and slight tenderness on pressure. The local temperature was raised and several cases showed mottled dark-blue discoloration similar to that seen in a bad sprain. Function was not unduly interfered with—both active and passive movements were partially restricted by stiffness. There was no oedema of other parts or joints, and so far as could be ascertained no renal or cardiac cause for the complaint. The general health remained normal. The treatment prescribed was rest. In severe cases the ankles were supported in elastoplast, and when bed space was available the patient was admitted to the sick-bay. The average time for disappearance of signs and symptoms and return to normal duties was four days. The less marked cases were excused duties and advised to rest as much as possible. These took nearly twice as long to recover, perhaps because they did not or could not rest efficiently. The aetiology of this curious complaint seems obscure. At first it was thought that prolonged standing, repeated minor trauma to unsupported ankles (all men wore gym. shoes) from the inevitable climbing of gangways, etc., contributed mainly, especially in men not yet physically hardened. More recently, however, I have seen the same type of case in thoroughly trained infantrymen, on short voyages, who were wearing boots all the time. The incidence here was negligible, however. I would like to hear the opinions of others who may have seen similar cases.

Gonorrhoea in North Africa

B. S. writes: To complete Dr. Campbell's summary (July 8, p. 44) it should be stated that tests had shown adequate absorption of the drug into the blood stream. The paper at once recalls the inadequate absorption of quinine tablets in malaria. What part of the alimentary canal absorbs the drug? Had conditions arisen that hurried the drug along this part or along the whole canal? Had partial inadequate treatment of the civilian population created a resistant coccus?

Marriage and Parenthood

Dr. H. M. DENHOLM-YOUNG (Farningham, Kent) writes: We are agreed that our patients expect us to be able to repair marriages and to prepare them for marriage, and we agree that we were not trained for this as students, but no one has suggested books. May I venture to suggest: for patients of all grades of intelligence, *The Sex Factor in Marriage*, by Dr. Helena Wright (Williams and Norgate Ltd.); for serious study, *Ideal Marriage*, by T. Van de Velde (Heinemann), and, regarding birth control, *Parenthood: Design or Accident*, by Michael Fielding (Williams and Norgate); and possibly for adolescents, *Men, Women, and God*, by Herbert Gray (Student Christian Movement). The first book, given to the husband, usually repairs a breaking marriage without further advice, and is obtainable from medical bookshops.

Concurrent Herpes Zoster and Varicella

Dr. C. H. BARNETT (Winchmore Hill, N.21) writes: Dr. J. J. Manning (July 22, p. 115) stresses that his patient with both herpes zoster and chickenpox is 63 years old. Since varicella is predominantly a disease of childhood and herpes zoster can occur at all ages, examples of the twofold condition would certainly be expected among children in the main if the view mentioned by Dr. Manning that coincidence alone is responsible were correct. The figures do not confirm this expectation, however. Out of 32 similar patients mentioned in British journals, 22 were more than 25 years old. Several were over 60, when varicella is most unusual. Coincidence is therefore unlikely to be the complete explanation.

Hospitality for Doctors' Children

Offers of hospitality for the families of doctors practising in danger areas are still being received. Any reader interested should communicate with the Secretary, British Medical Association, B.M.A. House, Tavistock Square, London, W.C.1.